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ECONOMIC COMMENTARY

Federal Reserve Bank of Cleveland

Midyear Report of the Fourth District Economists' Roundtable

by Michael F. Bryan and John B. Martin

The Fourth District Economists' Roundtable brings together the unique perspectives of analysts from many sectors of the economy, particularly finance and manufacturing. The thrice-annual meetings also provide a forum for business economists, academics, and policymakers to exchange ideas, make predictions, and enhance their respective efforts. This *Economic Commentary* is a summary of the May 20 meeting.

Looking into the future is a perilous duty, and it is wise to be humble about our abilities lest we give the impression we know more than we do. The difficulties in accurately assessing the economy's future, if not its current state, stem from our inability to grasp the broad scope of business activity and to anticipate the seemingly random patterns that aggregate measures of the economy frequently follow.

At the midyear meeting of the Fourth District Economists' Roundtable, held May 20 at the Federal Reserve Bank of Cleveland, we considered our limitations in describing the U.S. business cycle and looked at the capacity of forecasters to predict future economic events. We also asked participants to summarize the current and prospective state of the economy.

■ **"If you give them a number, don't give them a date. If you give them a date, don't give them a number."**

— Anonymous forecaster

The panelists were generally not surprised by the slower economic growth indicated in the first-quarter GDP report, following the sharp upturn in activity during the final three months of 1993. The first-quarter performance is viewed as a return to the growth pattern established last fall — a pattern that is expected to continue over the seven-quarter forecast period. The three-year-old boom in capital spending should continue fueling growth, as should consumer spending on durable goods and housing. Spending spurred by low interest rates, however, will likely be replaced by the income effects of increased employment. Meanwhile, the foreign sector is projected to improve only marginally as the economies of our major trading partners begin their slow recoveries.

Major constraints on growth are foreseen coming from the public sector. In addition to addressing continuing declines in government spending, the Roundtable also raised concerns about further federal tax increases.

Given these factors, the group's median forecast sees real GDP expanding roughly 3½ percent in the second quarter, moderating to approximately 3 percent in 1994:IIIQ, and then settling to a growth trajectory of around 2¾ percent over the remainder of the forecast horizon (figure 1).

Roundtable participants expressed considerable confidence in the outlook, and risks to the forecast are comparatively low (figure 2). For this year, the group assigns a 48 percent probability to real GDP rising between 3.0 and 3.9 percent and a 33 percent chance to growth in the 2.0 to 2.9 percent range. For 1995, that pattern reverses, with nearly a 40 percent probability of growth in the 2.0 to 2.9 percent range and a 32 percent likelihood of reaching the faster 3.0 to 3.9 percent pace. In neither year is the probability of a recession thought to be very high — less than 2 percent.

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On the inflation front, the Roundtable foresees little tendency for any deviation from the 3 percent trend posted over the past few years (figure 3). By the end of 1995, the median forecast shows the Consumer Price Index (CPI) rising at a rate of about 3¼ percent, just marginally above the pace projected for the latter half of this year.

In evaluating their call on the inflation outlook, however, the Roundtable participants see the risks favoring a slightly lower-than-expected rate in 1994, but higher-than-expected inflation in 1995 (figure 4). Specifically, the group sets the probability that this year's inflation rate will remain under 3 percent at 63 percent — against only a 37 percent likelihood of it rising at a faster pace. For 1995, the comparable probabilities are 45 percent that the inflation rate will hold under 3 percent and 55 percent that it will exceed that pace.

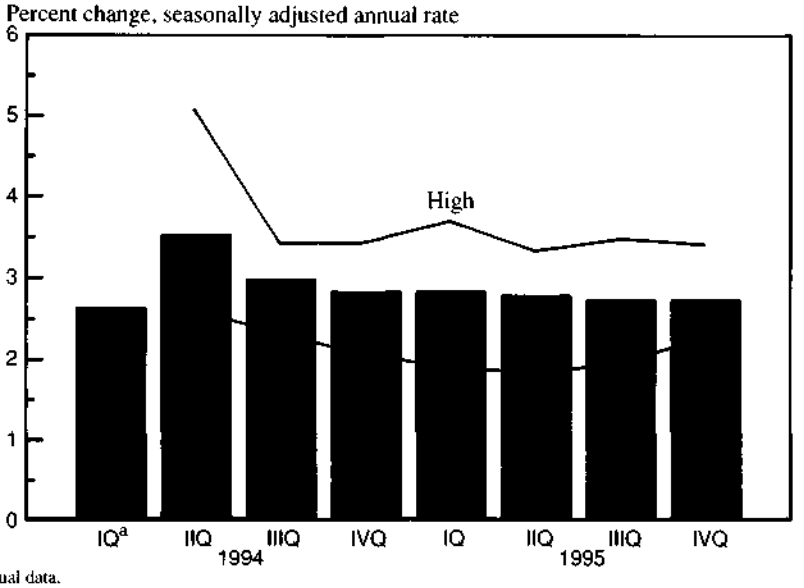
■ **"Jupiter's moons are invisible to the naked eye and therefore can have no influence on the earth, and therefore would be useless, and therefore do not exist."**

—Francisco Sizzi,
Professor of astronomy, 1610[1]

One perspective used by analysts in developing an economic outlook and evaluating incoming economic data is to compare current developments against historical trends. The episodic ebb and flow of the overall economy is usually characterized in terms of business cycles, or broadly defined states of aggregate economic performance.

The Roundtable economists see some difficulty in comparing the current expansion with other post–WWII episodes, largely because of recent structural changes in the economy. These changes inhibited growth early in the expansion, but more recently have engendered a stronger cyclical momentum. "In character, we are in the initial part of expansion and should make comparisons on that basis," suggested one observer.

FIGURE 1 MEDIAN REAL GDP FORECAST

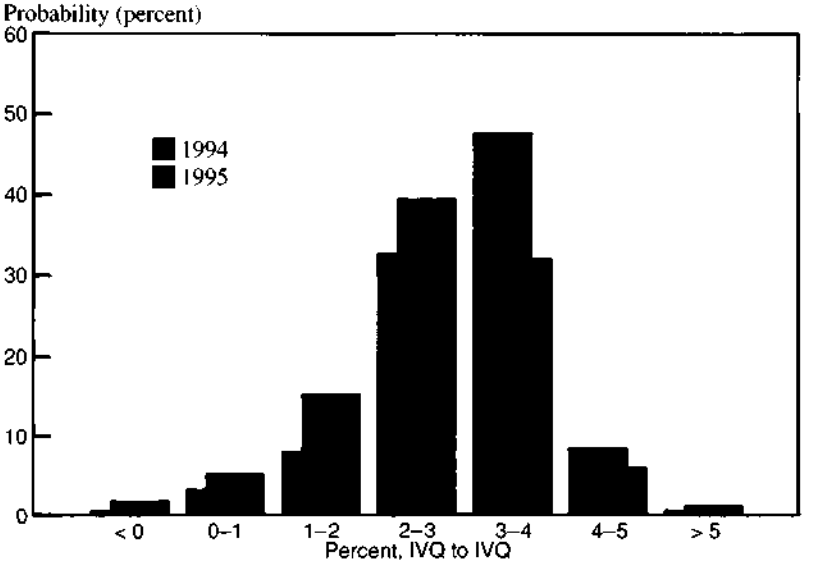


a. Actual data.

NOTE: High and low are the average of the three highest and lowest forecasts, respectively.

SOURCES: Fourth District Economists' Roundtable, Federal Reserve Bank of Cleveland, May 20, 1994; and U.S. Department of Commerce, Bureau of Economic Analysis.

FIGURE 2 REAL GROWTH PROBABILITIES



NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: Fourth District Economists' Roundtable, Federal Reserve Bank of Cleveland, May 20, 1994.

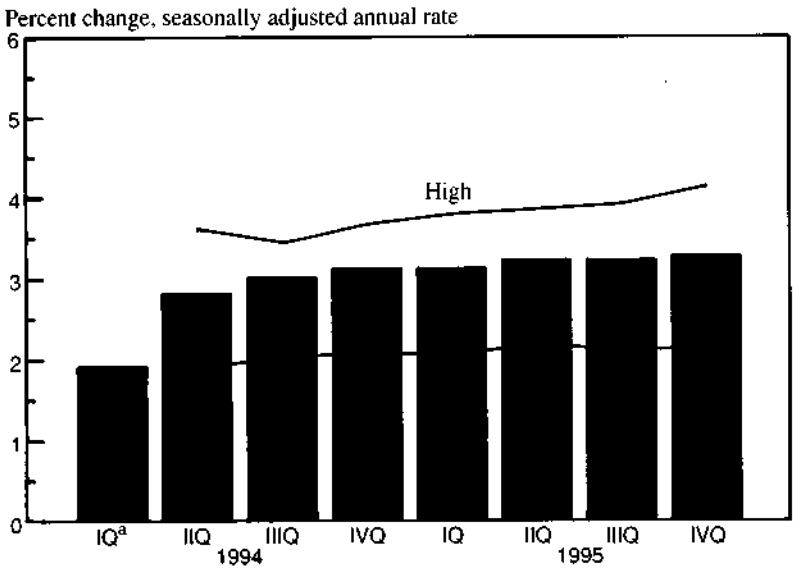
Macroeconometric forecasts exploit regularities observed in the data. Despite the unique aspects of individual business cycles, the forecasting process seeks to discern the common factors across cycles and, assuming that structural relationships among variables continue to hold, to project the future. Stephen McNees of the Federal Reserve Bank of Boston has published extensively on the accuracy and limitations of economic forecasting. Dr. McNees offered the following thoughts at the May Roundtable meeting.

■ **The Accuracy and Usefulness of Economic Forecasts**

Stephen K. McNees,
Federal Reserve Bank of Boston

Forecasts can be evaluated along numerous dimensions. The results depend on, among other factors, the economic variable of interest, the stage of the business cycle, the forecast horizon, the choice of actual data, and, most important, the forecast period under examination. For example, my research supports the following seven observations.

FIGURE 3 MEDIAN CPI FORECAST

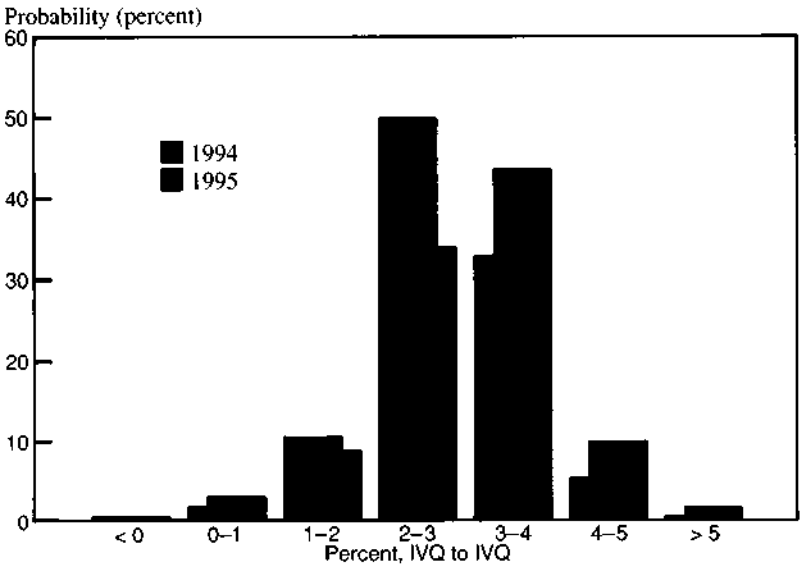


a. Actual data.

NOTE: High and low are the average of the three highest and lowest forecasts, respectively.

SOURCES: Fourth District Economists' Roundtable, Federal Reserve Bank of Cleveland, May 20, 1994; and U.S. Department of Commerce, Bureau of Economic Analysis.

FIGURE 4 INFLATION PROBABILITIES[a]



a. Measured by the Consumer Price Index.

SOURCE: Fourth District Economists' Roundtable, Federal Reserve Bank of Cleveland, May 20, 1994.

(1) Asset prices are hard to predict reliably. The Efficient Markets hypothesis explains why this is so by implying that asset prices follow a random walk. Evidence supports the hypothesis for many financial market variables (stock prices, exchange rates, and interest rates), but the theory does not extend to major macroeconomic variables (real growth, inflation, and unemployment rates).

(2) Cyclical turning points, especially the onset of recessions, are also hard to predict. This should come as no surprise, since most macroeconomic modeling uses quarterly data and focuses on the magnitude of change rather than on the direction of change. Business cycle turning points are measured with monthly, not quarterly, data, and their essence is timing; magnitude is clearly a secondary concern. Of the last four recessions, the only one that was widely expected was the 1980 episode. Ironically, because the official turning point (designated by the National Bureau of Economic Research) did not occur until well after several recession calls had been made, forecasters' respectability reached a trough at about the same time the successful pronouncement was issued.

(3) Forecasts of current-quarter GDP are much more accurate when measured against preliminary data than relative to subsequent revisions. Incoming, high-frequency data produce clear improvements in the accuracy of current-quarter GDP forecasts as the quarter progresses. These same high-frequency data lead to only modest improvements in the forecasts of revised data.

(4) The large one-year-ahead forecast errors for real GNP cluster around the 1972–74 and 1981–82 recessions and, to a lesser extent, the early recovery periods from the 1980 and 1981–82 recessions. At other times, these errors have been fairly small.

(5) After a poor performance in the 1970s, CPI forecasts have become much more accurate. They now show no signs of bias and convincingly dominate the predictions of naive models.

(6) From 1953 through the 1980s, the real GNP forecasts issued by the University of Michigan showed steady improvement when compared with either naive models or the variability of actual GNP growth. This improvement has not been sustained in the 1990s.

(7) Based on data from 1962 to 1987, the Council of Economic Advisers' forecasts of real growth and inflation, as measured by the GNP implicit price deflator, have been more accurate (either absolutely or relative to the forecasts of naive models) in the second half of the sample period than in the first. This result does not hold for nominal GNP forecasts.

Economic forecasts are most helpful when used along with some information on their probable accuracy. Accuracy is a multifaceted concept that can best be defined for a specific application. For retrospective comparisons, identical forecast periods are crucial.

Discussion surrounding McNees' presentation highlighted the difficulties business economists and policymakers face in actually predicting turning points in economic activity. Francis Diebold of the University of Pennsylvania spoke to the group about his work in modeling turning points, which he describes as "regime switches." He emphasized that to make progress in identifying a switch point, business cycle analysts must look beyond simple fluctuations in real GDP. Professor Diebold defines business cycles by the comovement of a large and encompassing body of economic data whose behavior differs depending on which of the two regimes (expansion or contraction) the economy is in.

TABLE 1 MONETARY POLICY PREFERENCES EXPRESSED BY THE FOURTH DISTRICT ECONOMISTS' ROUNDTABLE

What federal funds rate do you prefer at the present time?

	Percent of respondents
< 4.0%	0
4.0%	38
4.25%	38
4.50%	19
> 4.50%	6

What federal funds rate do you judge to be consistent with maintaining inflation at current levels?

	Percent of respondents
< 4.0%	13
4.0%	33
4.25%	20
4.50%	27
> 4.50%	7

NOTE: Percentages may not sum to 100 due to rounding.
SOURCE: Fourth District Economists' Roundtable, Federal Reserve Bank of Cleveland, May 20, 1994.

■ Measuring Business Cycles: A Modern Perspective

Francis X. Diebold, University of Pennsylvania and National Bureau of Economic Research

It is desirable to have a strong grasp of the facts before attempting to explain them — hence the attractiveness of organizing business cycle regularities within a model-free framework. During the first half of this century, much research was devoted to obtaining just such an empirical characterization of the business cycle. The most prominent example of this work was Burns and Mitchell's 1946 book, which contained the following empirical definition: "... expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle." [2]

Burns and Mitchell's definition of the business cycle has two key features. The first is the comovement among individual economic variables. Indeed, the comovement among series, taking into account possible leads and lags in timing, was the centerpiece of their methodology. In their analysis, the authors considered the historical concordance of hundreds of series, including those measuring commodity output, income, prices, interest rates, banking transactions, and transportation services. They used the clusters of turning points in these individual series to determine the monthly dates of the turning points in the overall business cycle. Similarly, the early emphasis on the consistent pattern of comovement among various variables over the business cycle led directly to the creation of composite leading, coincident, and lagging indexes.

The second prominent element of Burns and Mitchell's definition is their division of business cycles into separate phases or regimes. Their analysis, as was typical of those at the time, treats expansions separately from contractions. For example, certain series are classified as leading or lagging indicators of the cycle, depending on the general state of business conditions.

Both of the features highlighted by Burns and Mitchell as key attributes of business cycles were less emphasized in postwar business cycle models — particularly in empirical models that focused on the time-series properties of the cycle. Most subsequent econometric studies on business cycles followed Tinbergen's early work in using the linear difference equation as the instrument of analysis. This empirical literature has generally emphasized the time-series properties of just one or a few macroeconomic aggregates, ignoring the pervasive comovement stressed by Burns and Mitchell. Likewise, the linear structure imposed eliminated consideration of any nonlinearity of business cycles that would require separate analyses of expansions and contractions.

In a recent study, Glenn Rudebusch and I show how current theoretical and empirical research has revived interest in each attribute separately.[3] *We argue that nearly a century of literature on the statistical measurement of business cycles, including many recent articles, may be interpreted within a more general conceptual framework that includes common business cycle factors that switch regimes. We also provide some empirical analysis in an effort to unite the two literatures and to assess the likely usefulness of factor structure and regime switching in statistical characterizations of business cycle dynamics.*

In the first part of the empirical work, we deal directly with the composite index of coincident indicators, which is essentially an estimate of the common factor underlying aggregate economic activity. We ask whether its dynamics are well approximated by a switching model. To answer this question, we fit a

Markov switching model to the percentage change in the natural logarithm of the index, allowing for a potentially switching mean.

Several results emerge. First, the regime switching appears statistically significant, with the mean in the "bad" state significantly negative and the mean in the "good" state significantly positive. Second, the within-state dynamics display substantial persistence. Third, the estimated "staying" probabilities accord with the well-known fact that, on average, expansions last longer than contractions.

In the second part of the empirical work, we fit switching models to the individual indicators underlying the coincident index and examine the switch times for commonality. In similar fashion to our analysis of the index, we fit models to the percentage change in the natural logarithm of each of the underlying coincident indicators, allowing for potentially switching means. The component-by-component results are qualitatively similar to those for the coincident index, as would be expected in the presence of a regime-switching common factor. Furthermore, there is commonality in switch times, which again is indicative of factor structure. The evidence of switching in the individual series, however, is generally weaker than the evidence of switching in the index. This is consistent with the switching-factor argument. Individual series are swamped by measurement error, but moving to a multivariate framework allows a more precise extraction of the factor.

■ **"When you arrive at a fork in the road, take it."**

—Yogi Berra

One of the aims of the Roundtable is to provide a forum in which business economists can critique the conduct of monetary policy. In that sense, participants serve as adjunct advisors to the Federal Reserve. One of the questions put to the panel concerned the appropriateness of the latest hike in the federal funds rate from 3.0 percent to 4.25 percent. Specifically, each member was asked what federal funds rate he or she would prefer at the present time (table 1). The median view called for maintaining the current level, with 19 percent of the respondents favoring a slight 0.25 percentage-point increase and 38 percent wanting the rate lowered by an equal amount.

The second question was what funds rate the group considers to be consistent with a "neutral" monetary policy, that is, with maintaining inflation at its present level. Perhaps not surprisingly, the median response was that the current 4.25 percent rate will hold the price level in check, with 27 percent of the group believing that another 0.25 percentage-point increase is necessary and 33 percent favoring an equivalent decline. In any event, it was generally accepted that if the Federal Reserve is not currently in a position to maintain the inflation rate, it is close to that goal. This view seems broadly consistent with the reported intent of the most recent hikes in both the federal funds rate and the discount rate — increases that were, according to the Federal Open Market Committee, "designed to maintain favorable trends in inflation and thereby sustain the economic expansion."

A question we did not ask the Roundtable participants is what federal funds rate they perceive to be in line with the Fed's ultimate objective of price stability. Presumably, that would require a more significant rate increase than has been seen to date, as only 13 percent of the group believes that the present 4.25 percent rate is compatible with a disinflationary process. If the Federal Reserve hopes to achieve price stability, at what point does our policy shift from one that attempts to maintain inflation to one that actually hopes to reduce it? Perhaps that will be a question for the group's November 3 meeting.

■ **Footnotes**

1. Cited in *User's Reference Manual*. SHAZAM Econometrics Computer Program, New York: McGraw–Hill, 1993, p. 35.

2. See A. F. Burns and W. C. Mitchell, "Measuring Business Cycles," National Bureau of Economic Research, Studies in Business Cycles, no. 2, 1946.

3. See Francis X. Diebold and Glenn D. Rudebusch, "Measuring Business Cycles: A Modern Perspective," National Bureau of Economic Research Working Paper No. 4643, February 1994.

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The views stated herein are those of the authors and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

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U.S. Banking Sector Trends: Assessing Disparities in Industry Performance

by Katherine A. Samolyk

While the past decade appears to have been a difficult time for the U.S. banking sector, performance within the industry varied widely. Using state-level data, the author investigates the extent to which variations in banking conditions were associated with differences in bank size and holding company relationships. Controlling for local economic factors, very large banks had more problems with loan quality and poor profitability over the period than did smaller banks; the results, however, do not indicate an emerging relationship between bank size and bank performance. At the same time, smaller banks that affiliate with larger organizations in the form of holding companies appear to benefit from the relationships.

Competition for Scarce Inputs: The Case of Airport Takeoff and Landing Slots

by Ian Gale

Since 1986, airline carriers have exercised the right to buy and sell takeoff and landing slots at airports. Questions remain, however, about the optimal way to allocate these slots. This paper provides a framework for analyzing competition for such scarce inputs, describing the outcome of an auction of slots between two carriers, who may have existing slots, and the possible outcomes from a merger or takeover wave. The author finds that the equilibrium allocation of slots is typically asymmetric, but not monopolistic, because as the allocation of slots becomes more concentrated, the price that the leader must pay for the marginal slot rises. This suggests that the concern over monopolization of airports may be misplaced.

Regional Wage Convergence and Divergence: Adjusting Wages for Cost-of-Living Differences

by Randall W. Eberts and Mark E. Schweitzer

After decades of convergence, the economic fortunes of U.S. regions appeared to diverge in the early 1980s as measured by both per capita income and wages. This study examines that phenomenon by looking at the effect of relative price-level controls on the convergence/divergence of regional wages. The authors find that once prices are factored in, relative wage rates continue to converge across regions due to rising covariance between price and wage levels. The results also confirm that the trend in regional wage variation can be traced to declining differences in labor market valuations of worker attributes rather than to shifts in the regional composition of the workforce.

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