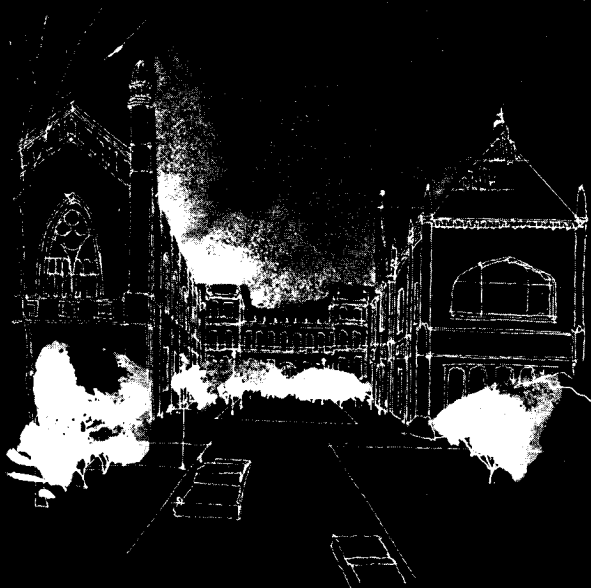


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Promise and Performance in Economic Forecasting

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Promise and Performance in Economic Forecasting

LEARNING about the past, in matters economic as in other spheres, can be an intellectual end in itself, but it can also be a means to the discovery or confirmation of regularities which may have future validity. Unlike history, which deals with presumably knowable but immutable facts, forecasting is concerned with unknown but probable and often partially controllable events to come. It is a guide to thinking about and planning for the future, a means whereby one tries to impose some mental discipline on what is necessarily hypothetical and conjectural. It has many uses and misuses.

In the economic realm, forecasting has many practitioners, of varying quality. Particularly in the United States, it is a sizable and highly diversified "industry" which has grown rapidly in the last two decades and will probably continue to grow. A large majority of its members are business economists whose main function is to provide information that should help to improve managerial decisions. Similarly, forecasters working for government agencies produce inputs that influence economic policy making. The principal scientific and academic use of forecasts is in testing the various hypotheses, models, and methods employed by the forecaster. Predictions of economic change can also serve as data for studying the way expectations are formed, transmitted, and revised.

All these are definitely bona fide uses of forecasts. But some forecasts are at least occasion-

ally and secondarily used as means of communicating intentions and influencing opinion, which may bias them or make them otherwise questionable.

In short, economic and business forecasters serve many different masters. Much of their output is communication to the business or government administrators who employ their services; some of their work is being done for the outside world-peers, professionals, the interested public. And it is not unusual for their products to have both internal and external uses. For example, an econometric model developed at a university may serve as a basis for scientific work and also as a source of forecasts circulated to business subscribers; aggregate forecasts by the economic staff of a corporation are a basic input to micropredictions of sales and other variables, and are also used in the company's publications and speeches by its executives; and so on.

The forecaster faces all sorts of conflicts of evidence and opinion which he often resolves by various internal compromises; since his work is essentially conjectural, much of this seems inevitable. The multipurpose nature of some forecasts may complicate the situation considerably by bringing forth some conflicts of interest as well.

In this context, one may ask several questions. Since forecasts have so many different uses, can their usefulness be measured by their accuracy or be meaningfully evaluated in any general terms? Since forecasters have so many different "masters" (employers, customers, audiences), to whom are they responsible, and for what? And what do the answers imply with respect to the reasonable expectations and behavior of users of forecasts?

These questions are so broad that it will be necessary to concentrate on what is best known to us from previous and current studies, namely, short-term forecasts of the major indicators

of macroeconomic activity.¹ Because governmental economic policies are to a large extent based on such forecasts, the subject is particularly significant and important.

In principle the decision maker who knows the costs of acquiring and using the forecast and the returns attributable to it should, in retrospect, be able to evaluate the goodness of the forecast exactly. But such knowledge is rare, as it is difficult and costly to develop the information required.

However, it is often possible to measure meaningfully the **accuracy** of forecasts, by comparing the predicted with the subsequently recorded actual outcomes; and it seems natural to view the over-all accuracy of a given set of predictions as the principal single aspect of their quality. Other important aspects of quality are more difficult to assess, so users, confronted with comparable forecasts, tend rationally to prefer those from a source which has proved significantly more accurate in the past.

Ideally, forecasts should be unbiased and efficient; that is, their **average** error should be approximately zero (no systematic under- or overestimation) and there should be no significant correlation between errors and forecast values. This is because the forecaster should learn from past errors how to avoid bias and inefficiency, whereas random errors are by and large unavoidable. In practice, however, many economic forecast series are not long enough or not consistent enough to permit successful measurement of, let alone correction for, the "systematic" error components.

Whenever possible, it is desirable to study

1 For a comprehensive review of findings based on a large collection of such forecasts, and references to literature, see Victor Zarnowitz, "Forecasting Economic Conditions: The Record and the Prospect," *The Business Cycle Today*, ed. Victor Zarnowitz (New York: National Bureau of Economic Research, 1972), pp. 183-239.

the average performance of a forecaster (or of a forecasting model or method) over a reasonably long stretch of time including diverse economic developments. Isolated successes or failures in forecasting can be due more to chance than to the quality of the forecaster's skills and tools. Also, individual predictions can suffer from excusable errors in assumptions about "exogenous," perhaps noneconomic, events; or conversely, they can happen to be relatively accurate in spite of being based on wrong assumptions (i.e., they can be "correct for wrong reasons," which usually involves offsetting errors). However, if a forecaster's record is poor on the average over time, it is unlikely to be so only because of consistently wrong assumptions (and, if it were, this would hardly be an acceptable excuse).

Some *Results of Recent Studies*"

Forecasts of GNP and industrial production made late in the year for the year ahead have for the most part been more accurate than (a) simple extrapolations of the last level or change and (b) projections of trends and of relationships between present and past values of the series in question.³ As a very general

2 This is a brief summary of selected findings, stated in general, largely qualitative terms. For evidence on the points made, see Victor Zarnowitz, *An Appraisal of Short-Term Economic Forecasts* (New York: NBER, 1967); Rendigs Fels and C. Elton Hinshaw, *Forecasting and Recognizing Business Cycle Turning Points* (New York: NBER, 1968); Jacob Mincer, ed., *Economic Forecasts and Expectations: Analyses of Forecasting Behavior and Performance* (New York: NBER, 1969); Geoffrey H. Moore, "Forecasting Short-Term Economic Change," *Journal of the American Statistical Association* (March 1969), pp. 1-22; and the reference in n. 1.

3 The trend and autoregressive projections (b) are on the average much more effective than the "naive models" (a). Over certain shorter periods, however, this need not be so. Thus in 1964-69, a period of sustained growth, extrapolations of last change in GNP had smaller errors than other, more sophisticated and usually more accurate benchmark models; indeed, they then compared favorably with several sets of forecasts with superior performance records in the past.

rule, the averages and dispersion of errors in economic predictions increase steadily with the time span to the target period. Forecasts for one to three quarters ahead are usually better (in the sense of having smaller average errors) than the various extrapolative models, but the longer forecasts are often worse than the more effective of these models.

Many forecasts tend to underestimate the growth of the economy, that is, they predict too small increases in such comprehensive series as GNP, employment, and industrial production. The smoothly growing aggregates (e.g., consumer expenditures) tend to be much more accurately predicted than the more volatile series (e.g., fixed investment outlays, change in inventories), but they are subject to particularly large underestimation errors and are in this respect often inferior to good trend projections.

Forecasters face problems of varying nature and difficulty in dealing with different types of economic change. The prevalence of growth trends in the economy makes it relatively safe to predict the continuation of a business expansion through much of its progress, but a reasonably accurate forecast of *when* the current expansion is going to end is hard to make even over rather short spans of time. The declines in the comprehensive series of income, output, and spending are much less frequently underestimated than the increases. Many are at least initially missed, and some turns are predicted that do not occur. The ability of economists to predict the dates of turning points several months ahead must be rated as generally poor, even though they are apt to recognize these events more promptly than other observers of business and financial developments, and even though extrapolations tend to be considerably worse in this regard.

Forecast revisions—changes in predictions

for a given target period made at dates successively closer to that period—are related to errors in previous forecasts and they do tend to improve prediction in most cases.⁴

It is difficult to determine whether the accuracy of macroeconomic forecasts has improved or deteriorated over the years. For example, one large collection of annual GNP forecasts shows mean absolute errors of \$7.5 billion in 1957-63 and \$9.4 billion in 1964-70; these represent 32.1 and 17.8 percent of the mean absolute annual changes in GNP during the two respective seven-year periods. This comparison, then, suggests an improvement, since the errors declined relative to the levels and changes in the predicted series (even though they increased in terms of dollars). But some other comparisons suggest the opposite. The results vary for different forecast sets and criteria of predictive performance.

The main positive conclusion that can be drawn from these findings is that many forecasters predict the near-term movements in the economy more accurately than could be achieved by means of pure time-series analysis. This is not a negligible success since the better extrapolative models are technically sophisticated products of this type of analysis. But favorable comparisons of economists' forecasts with mechanical extrapolations do not mean very much. Surely, competent and experienced persons with training in theoretical and applied economics and statistics should outper-

‡ **These results suggest elements of partially successful “adaptive forecasting” or learning from recent errors. But the inflow of other new information between the successive forecasts also helps to increase the accuracy of the latest, relative to the earlier predictions for a given period. This presumably is the reason that the rule that forecasts for shorter spans tend to be more accurate than forecasts for longer spans turns out to be stronger in the situation considered here than in comparisons between forecasts made at a given point of time for sequences of several quarters or other short intervals.**

form fixed formulas which can provide ready-made forecasts to anyone with access to a computer. Furthermore, it can be argued, the fluidity of economic change is such as to require flexible and judicious, rather than rigid and mechanical, approaches.

The Application of Information Theory to Forecasting

Forecasts from one source (X) can have higher over-all accuracy over time than those from another source (Y) and yet be in an important sense less informative to the user.⁵ Suppose that most of the events predicted by X and Y have a high probability of occurrence; such outcomes, when confirmed by the forecast, cause little surprise. On the average, X predicts these "common" events slightly better than Y, but this makes little difference to the user in his decision making. However, Y has a large average advantage over X in predicting the small minority of events that have a very low probability of occurrence, and the user is greatly helped by these few "hits" of Y, since they concern relatively rare and hard-to-predict outcomes. Such situations need not be uncommon.

Turning points in series with persistent trends typically represent events that are hard to forecast, and they also are often viewed as particularly important for certain types of decisions. As an example, consider that X predicts with somewhat smaller errors than Y the many quarterly increases in GNP but, unlike Y, misses entirely a few declines.

Another important instance is the situation in which fiscal and monetary policies disagree

5 To insure comparability of X and Y, suppose that either set consists of n predictions for the same variable z , made at the same times for the same target periods; also, that the costs to the user of X and Y are equal. In practice, comparability between forecasts from different sources appears to be nearly always far less complete.

in direction, instead of being both either expansionist or contractionist as is most often the case. The forecaster presumably faces a much more difficult task, but also has an opportunity for a more informative prediction when the policies differ than when they reinforce each other.

Information theory offers an approach to the evaluation of forecasts which takes into account the differential likelihood of occurrence of alternative forms that the events involved can take. An "information gain" is achieved if, and to the extent that, the events in question are observed to occur more frequently when they are predicted than when they are not. If the unconditional probability of an event (independent of whether the latter was or was not predicted) is high, as it is for common phenomena with high realization frequencies, then such gains are difficult to achieve and likely to be small. In general, however, positive information gains are to be expected, since the standard of comparison is in a sense a "naive model" based only on historical frequency distributions whose predictive value for any specific future period is often quite limited.

Applications of this approach to survey forecasts of the directions of change in selected economic variables confirm that information gains, while generally positive, vary greatly in inverse relation to the unconditional or ex ante probabilities.⁶ Consistent results have been obtained in different ways for turning-point predictions, both those based on the use of the NBER leading indicators and those extracted from quantitative forecasts of economic aggregates. For example, forecasts of troughs

6 See **Henri Theil**, *Economics and Information Theory* (Amsterdam: North-Holland Publishing Co., 1967), chaps. 1 and 2, where the logarithmic probability concept of information (first developed in communication engineering) is applied to several problems in economic forecasting.

are in general more accurate than those of peaks, a tendency which can be explained by referring to the distribution of durations of expansions and contractions in the growth-dominated U.S. economy.⁷

and the Results

Summary measures of forecast errors and evaluations of turning-point errors and information gains can tell us quite a bit about forecasters' performance, but they have serious limitations which reflect the fact that they can be obtained even for predictions about whose derivation little or nothing is known. To establish what the forecast errors are is necessary but far from sufficient for understanding what makes them what they are, and thereby for learning how to make or choose better forecasts. Thus measurement and comparisons of the errors ought to be followed by qualitative and quantitative analyses of sources and causes of errors. But this requires much more information on how the forecasts are produced than is available for the great majority of sources and types of economic prediction.

An important reason for this situation is that a great many forecasts by business economists are largely "judgmental" and not accompanied by explicit specifications of the methods and models used, although their messages are generally and increasingly specific and numerical. Some of this shortage of data on just how the forecasters work is due to their unwillingness to disclose presumably valuable individual "trade practices," and some may be due to the desire to conceal the lack of a sub-

⁷ Such distributions, derived from the NBER business cycle chronology, provide one mechanical method of estimating the *ex ante* probabilities of cyclical turning points. Forecasts based on leading indicators yield somewhat smaller frequencies of error than that method, especially for troughs. See Arthur M. Okun, "On the Appraisal of Cyclical Turning-Point Predictors," *Journal of Business* (April 1960), pp. 101-20.

stantial personal contribution and the dependence on guesswork or prevailing opinions. Cases in the latter category, of course, involve various degrees of deception. But there is no general presumption or evidence that informal judgmental forecasts are merely or mainly hunches. On the contrary, at least the better ones among them, and their numbers are considerable, originate in the application of various forecasting techniques as well as skilled judgment to substantial bodies of diverse data.*

Probably the major reason that there is so little detailed information on how economic forecasts are constructed lies in the difficulty and cost of assembling such information. Most of the forecasts by business economists are eclectic and framed loosely in terms of national income accounts; they use in varying combinations models of economic relationships, anticipatory data from surveys, business cycle indicators, and judgments about the probable effects of recent and expected events. It is very hard, if at all possible, even for the forecaster himself to reconstruct such predictions, including the assumptions on which they are based.

Econometric forecasters use models that are much more specific, explicit, and formal in order to promote internal consistency in handling large amounts of complex information. However, forecasting with econometric models requires projections of exogenous variables, and these are essentially judgmental though often derived with the aid of various extrapolations. Moreover, the authentic, before-the-event forecasts in this class typically incorporate judgmental adjustments of the computer solutions of the models. Data on these inputs

8 For the purposes of studying predictive performance, such forecasts clearly deserve attention, whereas mere opinions of the "follow-the-leader" or other types do not. It should be noted, however, that all kinds of professed predictions on record, including the hunches, guesses, and imitations, would be appropriate data for examining the state and changes of expectations or opinions about economic conditions.

to, and alterations of, the models often are unavailable or incomplete, and this impedes reconstruction of many econometric predictions. It is therefore highly desirable that such data be systematically recorded.

For some quarterly econometric forecasts, full information of this sort has been collected and evaluated with the cooperation of the model builders.⁹ The analysis shows that these forecasts have been in many cases substantially improved by the adjustments of the constant terms of the models. Errors in the specifications of the models and in the forecasts of the exogenous variables frequently cancel each other or are offset in various degrees by the adjustments made. Indeed, the *ex ante* forecasts with the adjustments are on the whole more accurate than the *ex post* forecasts, even though the former do and the latter do not include errors in the exogenous variables.

The *ex ante* forecasts with econometric models are in most of the examined instances more accurate than the noneconometric, primarily judgmental forecasts, but often by small margins. The samples of comparable observations are here so small, and the variability of the results is so large, that these results are rather inconclusive. Nevertheless, they do indicate that the *ex ante* forecasts of the econometricians are often as much a product of their authors' judgments and other information¹⁰ as of their formal models. These models, despite

a Michael K. Evans, Yoel Haitovsky, and George I. Treyz, assisted by Vincent Su, "An Analysis of the Forecasting Properties of U.S. Econometric Models," in *Econometric Models Of Cyclical Behavior, Studies in Income and Wealth*, vol. 2, no. 86 (New York: NBER, 1972), pp. 949-1158. This study covers two sets of forecasts, one private and published (Wharton) and one governmental and unpublished (Commerce).

¹⁰The use of anticipatory data has been shown to improve econometric predictions for the short spans (of six months or less). See, e.g., Lawrence R. Klein, *An Essay on the Theory of Economic Prediction* (Helsinki: The Academic Book Store, 1968), pp. 86-89, on the role of consumer attitudes and investment-intentions data in the Wharton model.

(some say, because of) their relative complexity, do not confer upon the econometric forecasts a clear-cut, general, and consistent advantage over predictions that are derived by more informal approaches. But this is not inconsistent with the view, which I share, that the interaction of the econometricians with their models can be highly instructive and rewarding.¹¹

By providing information on the structure of their models, econometric forecasters make a potentially large contribution to the improvement of forecasting tools and techniques. But disclosure by other qualified and serious forecasters of their assumptions and methods can be similarly helpful and is always possible in some degree. To promote it, the quarterly ASA-NBER surveys of the economic outlook regularly collect information on the major premises and procedures incorporated in the members' forecasts.¹² The participants in each survey are asked to rank the items in a short list of general forecasting techniques according to their own working preferences. From about half to two-thirds of them rank as first the "informal GNP model," in which the major expenditure components of the gross national product are predicted in various ways, combined into an over-all forecast, and then checked and adjusted for plausibility and consistency. Most forecasters also report using leading indicators, anticipations surveys, and econometric models, but relatively few rank these approaches first.

The survey replies make it evident that none of the identified techniques enjoy a general and regular preference of the forecasters. This

11 Moreover, it is well to keep in mind that the models provide other than forecasting services, though these are ignored here.

12 These are surveys of predictions by those members of the Business and Economic Statistics Section of the American Statistical Association (ASA) who are professionally engaged in a continuing analysis and forecasting of economic conditions.

is significant in that it suggests that none is expected to prove consistently superior to the others. Rather, the forecasters distinctly favor using the several approaches in varying combinations.

Reputable forecasts for a given variable, issued at about the same time for the same target period, are likely to have much in common because their authors draw upon the same body of data, use similar methods, are exposed to the same current events and attitudes, and to some extent influence each other directly. Nevertheless, individual forecasts aiming at a given target frequently do show a great deal of diversity. Indeed, the dispersions of their errors are such as to cast doubt upon the view that numerous forecasters conform closely to the "standard forecast" prevailing at any given time. A forecaster must indeed expect his results to be compared with that standard (often also called the "consensus" forecast) which is widely reported by professional associations and business magazines, and other media. But the standard forecast itself is no more than what is perceived to be the common drift of some publicly available predictions considered representative of expert judgment; it is an unspecified average which lags somewhat behind the release of many noteworthy forecasts for the same period. No doubt many forecasters are influenced by it, but not in a uniform fashion: while caution will often produce a reluctance to deviate much from the "consensus forecast," some will wish to attract attention by being different in one or another direction. The best rule, however, which many forecasters are likely to be following, is not to let such considerations affect one's predictions in any decisive manner.

Some Implications for Macroeconomic Policies

The phrase "promise and performance," in this political season, reminds one of the words of candidates for important public offices and

the deeds of the incumbents; but, unlike elected politicians, economic forecasters generally have no power to work toward the realization of their vision of the future. They therefore cannot promise that what they predict will happen, only that under the given or assumed conditions it is more likely than not to happen. The real promise of economic forecasting is the prospect that it can produce a reliable basis for more successful decision making.

Aggregative forecasts, in particular, are always closely related to appraisals of past, current, and prospective economic policies of the government, and the most important of their possible functions is to serve as a basis of these policies. In this context, governmental forecasts, especially those of the President's Council of Economic Advisers (CEA), deserve most attention. The information on them is rather incomplete: only the annual forecasts of CEA are available in numerical form, and not before 1962.

Government forecasts ought to benefit from the prompt and full access to data from official statistical agencies and the budgetary process, but apparently this is not sufficient to make them superior to private forecasts. Knowledge of its own plans for spending and taxing, ability to adjust these plans and partially control the results, some influence on the actions of monetary authorities—all these give the government certain advantages, but not without some costs to its forecasts as well.¹³

¹³ As observed by Henry C. Wallich in "Promises and Facts—The Business Outlook after Two Months," *Economic Prospects*, a quarterly report published by Commercial Credit Company, Baltimore, Md., vol. 1, no. 2 (Spring 1972), p. 3: "The private forecaster must forecast the Government as well as the economy. But he is not trapped by official pronouncements. The Government may not feel completely sure that all its spending and taxing proposals will be accepted by Congress. But, for purposes of its forecast, it has no choice but to treat them as a *fait accompli*. The private forecaster can draw his own conclusions."

On balance, the CEA predictions were about as accurate as the more successful ones of the private predictions-better in some years and for some variables, worse in other cases.¹⁴

The CEA forecasts of GNP, like the better private forecasts, were definitely superior to several types of mechanical extrapolation of past movements. In the ten years 1962-71, the mean of actual percentage changes in GNP was 6.95 percent and the mean of the corresponding CEA predictions was 6.92 percent. The average absolute error of these forecasts was only 1.2 percentage points. CEA overestimated the rise of GNP in 1962, 1967, 1970, and 1971 (all years of either retardation, recession, or sluggish recovery), and these errors just about offset the underestimates in the other six years. It would seem that the performance deserves a high grade.

But forecasts that are to guide the policy makers properly in their major decisions on economic stabilization measures must have a very high degree of accuracy. Relatively small errors in predictions of total GNP, employment, and labor force can be and often are associated with relatively large errors in predictions of such "residual" magnitudes as unemployment. Similarly, small errors in forecasts of the levels of inventories and price indexes may well imply large errors in forecasts of inventory investment and the rates of change in prices (inflation) . And, even if the comprehensive indicators of the nation's economic activity (income, spending, production) are rather well predicted, major inaccuracies in the anticipated figures for unemployment,

¹⁴ Zarnowitz, "Forecasting Economic Conditions: The Record and the Prospect" (as cited in n. 1), pp. 212-14. For analyses of the CEA forecasts, see also Geoffrey H. Moore, "Forecasting Short-Term Economic Change" (referred to in n. 2) and Arthur Cooper Nichols, "An Appraisal of the Forecasting Performance of the Council of Economic Advisers," unpublished dissertation, Georgia State University, School of Business Administration. 1971.

inflation, investment, and and so on, can greatly impair the usefulness of the forecast for purposes of macroeconomic policy.

The largest error of overestimating the economy's growth was made by the CEA in 1962, when a still young recovery showed unexpected signs of faltering. The best year for the government economists who relied mainly on fiscal policy measures was 1964, when large tax reductions were enacted and the CEA forecast proved remarkably accurate.¹⁵ Early in 1966 unemployment fell below 4 percent, the economy regained a high level of capacity utilization, and the "new economics" of Keynesian persuasion was widely credited with this success. But the euphoria was short-lived.

Large underestimation errors (well exceeding the \pm \$5 billion range projected by the Council) characterized the official GNP forecasts for 1965, 1966, and 1968. The economic consequences of the war in Vietnam and misjudgments concerning the timing and effects of changes in economic policies contributed strongly to these errors. The errors in the late 1960's can be traced in large part to inflation, which was more strongly underpredicted by the CEA than by many private forecasters.

The economic slowdown in the first half of 1967 was anticipated (indeed, with much fear of a recession) by those economists who paid foremost attention to the decline in the growth of money supply in the second half of 1966, whereas it was missed by most economists (including the CEA) who expected dominant ex-

15 The two events were closely linked, according to the *Economic Report of the President, 1965*, p. 38: "The optimistic forecast for 1964 depended on the tax cut, and its fulfillment is a measure of the tax cut's accomplishments." Milton Friedman criticized that this ignores the role of monetary policy; a counterargument was made that the monetary strategy of the time was throughout oriented toward interest-rate stabilization and unchanged by the tax cut (see Arthur M. Okun, *The Political Economy of Prosperity* [Washington, DC.: Brookings Institution, 1970], pp. 53-59).

pansionist effects from the growing federal budget deficit. In the last half of 1968 a strong restraining impact upon the economy of the surtax enacted in June was predicted by the "fiscalists," while the "monetarists" again dissented, expecting that the expansion and inflation would continue to be strong mainly because of the high rates of growth in money supply in the previous year. The boom and inflation did persist unabated, and expectations that the fiscal restraint would "cool" the economy early in 1969 led to further underestimation errors. In 1970 real GNP fell by 0.4 of one percent and the CEA forecast implied a small rise (of about 1.3 percent), but some monetarist predictions of a mild recession with zero growth in output in the next year had been made late in 1970.¹⁶

However, some other forecasts based largely on monetarist views were not so successful. Recent predictions seriously underestimated the rates of inflation in 1969 and 1970 and seriously overestimated the growth of real GNP in 1971 (the CEA anticipated that the latter would be 4.5 percent but it was only 2.7 percent).¹⁷ Too much strength has been claimed on behalf of monetary changes in that the responses to them of economic activities proved much slower (weaker) than the monetarists anticipated. In short, first inflation was expected to yield much sooner to the monetary slowdown than it did and then output was ex-

16 Beryl W. Sprinkel, "The Cost of Restoring Stability," *Journal of Business* (January 1970), pp. 1-5. Sprinkel's forecast was presented at the Annual Business Forecast Luncheon sponsored by the Graduate School of Business of The University of Chicago on December 9, 1969.

17 This overestimation error is similar to that in the CEA forecast for 1962. There was little inflation in 1962, which was correctly recognized. The continued strength of inflation in 1971 was underestimated but not by a large margin. In both years many private forecasts turned out to be significantly more accurate.

petted to rise much faster in reaction to monetary acceleration than it did.

My own view is that the effects on the economy of both monetary and fiscal changes have been exaggerated in the recent disputes. Monetarists as well as fiscalists have claimed too much for the policies they endorsed. These "promises" led the public at large to expect standards of both prediction and performance that economists do not know how to achieve, at least as yet. It is well to recognize this and to learn from the experience, and there are some indications that the learning process is under way.¹⁸

In the light of recent appraisals, there are grounds for considerable criticism of some practices and results of economic forecasting but not for discouragement about its prospects. Where the performance has not matched the promise, it has been mainly because the latter was unreasonably high, not because the former was unacceptably low according to more realistic standards. Still, it is clear that there is much room and need for improvement. The challenge to seize such opportunities for progress as exist in this area requires a self-critical, searching, and analytic attitude on the part of forecasters. Moreover, I believe that not only economic forecasting but economics at large would benefit if the economic profession generally paid more attention directly to the development of their real predictive abilities.¹⁹ The progress, here as elsewhere in sciences dealing with human, social, and political phenomena, is not likely to be easy, fast, and con-

¹⁸ Compare Milton Friedman, "Have Monetary Policies Failed?" *The American Economic Review*, Papers and Proceedings (May 1972), pp. 11-18.

¹⁹ For an exposition of somewhat similar views, see G. D. N. Worswick, "Is Progress in Economic Science Possible?" *Economic Journal* (March 1972), pp. 73-86.

tinuous. It is, however, certainly possible and likely to be achieved gradually. Statisticians, as well as economists, will have much to contribute to this advance. The development of more complete and better data and techniques, and testing of existing hypotheses and models, are probably at least as important here as further work on devising new schemata in macroeconomic theory.