

**SOCIAL MAN AND
THE NEW STATIONARY
STATE**

**HOW WELL DO
ECONOMISTS FORECAST?**



MAY 1971

FEDERAL RESERVE BANK

BUSINESS REVIEW

OF PHILADELPHIA

Social Man and the New Stationary State

. . . Is halting the hectic pace of economic growth an answer to the problems we, as a society, confront?

How Well Do Economists Forecast?

. . . A careful evaluation of past successes and failures in forecasting suggests some surprises about this year's predictions may be in store.

BUSINESS REVIEW is produced in the Department of Research. Ronald B. Williams is Art Director. The authors will be glad to receive comments on their articles.

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Social Man and the New Stationary State*

by David P. Eastburn, President,
Federal Reserve Bank
of Philadelphia

There are two kinds of people in the world today: those who are primarily concerned with making a living and those who are primarily concerned with living with their fellows. The first might be called Economic Man; the second, Social Man.

One of our main problems these days is that Social Man and Economic Man see the same things differently. Social Man urged his Congressman to oppose the SST because it would make too much noise and might induce skin cancer; Economic Man, if he opposed the SST at all, did so because it would not get off the ground financially. Social Man sees the moon shots as an extravagant use of resources at a time when much of the world is starving; Economic Man sees them as spinning off many scientific by-products that some day can improve every-

one's standard of living. Social man faithfully lugs his used Coke bottles to the neighborhood collection center every Saturday morning for recycling; Economic Man is inclined to feel that if empty bottles were worth anything, somebody would pay for them.

My point is not that Social Man is soft-hearted and -headed or that Economic Man is a Scrooge, but that both have much to learn from each other. I have developed this theme in a general way elsewhere**, but would like to explore one important aspect of it here.

To introduce this aspect, let me read an excerpt from the writings of a distinguished philosopher:

Towards what ultimate point is society tending by its industrial progress? . . .

. . . the tone and tendency . . . [of the speculations of political economists of the last two generations] goes completely to identify all that is economically desirable with the progressive state, and with that alone.

*An address given before the 1971 Annual Meeting of the National Assembly for Social Policy and Development, Inc., Denver, Colorado, April 30, 1971.

**"Economic Man vs. Social Man," *Business Review*, Federal Reserve Bank of Philadelphia, October, 1970.
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I cannot . . . regard the stationary state of capital and wealth with the unaffected aversion so generally manifested towards it by political economists of the old school. . . . I confess I am not charmed with the ideal of life held out by those who think that the normal state of human beings is that of struggling to get on; that the trampling, crushing, elbowing and treading on each other's heels, which form the existing type of social life, are the most desirable lot of human kind, or anything but the disagreeable symptoms of one of the phases of industrial progress. . . . the life of the whole of one sex is devoted to dollar-hunting and of the other to breeding dollar-hunters.

There is room in the world, no doubt . . . for a great increase of population. . . . But even if innocuous, I confess I see very little reason for desiring it. . . . [There is not] much satisfaction in contemplating the world with nothing left to the spontaneous activity of nature . . . with . . . scarcely a place left where a wild shrub or flower could grow without being eradicated as a weed in the name of improved agriculture. If the earth must lose that great portion of its pleasantries which it owes to things that the unlimited increase of wealth and population would extirpate from it, for the mere purpose of enabling it to support a larger, but not a better or a happier population, I sincerely hope, for the sake of posterity that they will be content to be stationary, long before necessity compels them to it.

It is all there: a challenge to the unthinking assumption that growth, *per se*, is good; a denunciation of money-grubbing and over-consuming; a clear brief for the zero population advocates; and an eloquent appeal for preservation of the environment.

The only thing missing is a complaint that

we have become slaves to technology. This is missing because it was written a century ago. The author is John Stuart Mill, a genius who began learning Greek at the age of three and ultimately became the outstanding economist of his age. One of his most intriguing contributions is the concept of the Stationary State. This concept is now captivating many who, overwhelmed by the problems confronting society, wonder whether the solution might be simply to stop this hectic pace of change and growth. It is now fashionable to talk of a *new* Stationary State.

What are the chances that a new Stationary State is the solution to our social problems? Let us look at this question from the points of view of both Economic Man and Social Man.

RECIPE FOR GROWTH

Economic Man has developed a most sophisticated recipe for growth, and for the past century or so has been proudly serving up his product for us all to consume. The recipe relies heavily on the ingredients of science and technology. Scientists must be free to indulge their limitless curiosity about how nature works. Technologists must be free to apply the fruits of science to the satisfaction of human wants. People must want things and be willing to work to get them. Producers must be free to turn out these things with an ever-decreasing input of human effort—that is, with ever-increasing productivity.

Economic Man may say that he attaches no moral connotations to the result. It is neither “good” nor “bad”; is simply what people want, and if people want to risk cancer by smoking cigarettes, that is their decision; the system is neutral. Actually, Economic Man is seldom content with that position. He really believes that the freedom which the system requires is “good,” and that the system has tremendously improved the physical well-being of mankind and *that* is “good.”

PROOF OF THE PUDDING

It is true that we have made tremendous advances in overcoming the niggardliness of nature and that the advances have been proceeding at a faster and faster pace. All of us have been made aware of this by a barrage of gee-whiz statistics in current literature. For example, Alvin Toffler in *Future Shock* calculates that

. . . the child reaching teen age . . . is literally surrounded by twice as much of everything newly man-made as his parents were at the time he was an infant. . . . Since the increases are compounded, . . . by the time the individual reaches old age the society around him will be producing thirty-two times as much as when he was born.

It is also true—in the United States, at least—that a remarkably large proportion of the people have participated in the growing affluence. To some extent, this is because Social Man has made a conscious effort to redistribute slices of the income pie, but to a great extent also it is because Economic Man has done such a good job of enlarging the total size of the pie. We all owe a great debt to Economic Man, and Social Man should not forget it.

But Social Man is not so coy about attaching values to economic growth and, in his eyes, they are not all “good” ones. For most of the past century, he has been striving to round off the rough corners of economic growth. His gadfly efforts have contributed child labor laws, pure food and drugs, the progressive income tax, social security, and countless other reforms.

Still he is not content. Indeed, he feels he is losing ground. Mill’s idea of the Stationary State, therefore, now looks like the ultimate solution to the mounting problems of economic change.

REACTION TO CHANGE

This is a healthy reaction. It involves

questioning many long-unquestioned assumptions. In one of his columns in the *New York Times*, Leonard Silk has written about J. K. Galbraith:

The real problem today, says Mr. Galbraith, is not how fast we can increase production and consumption but how well—how happily—we are to live.

‘In a rational life style, some people could find contentment working moderately and then sitting by the street—and talking, thinking, drawing, painting, scribbling or making love in a suitably discreet way. . . . None of these requires an expanding economy.’

Some other reactions, however, are not so healthy. One has been to seek refuge in nostalgia. In Philadelphia we have a new magazine whose journalistic precept (and I am quoting from its own advertising) is that

. . . too much attention is being directed to the counter-productive elements . . . in our society . . . [The] cover and graphics reflect the feel of a special quality, vintage nostalgia, wherein we can more comfortably explore the constructive workings of our people and community . . . nostalgia that reminds us that despite the problems and complications of everyday living, life can still be romantic . . .

Another reaction has been fear and uncertainty, fear of change and uncertainty in our ability to control it. J. Irwin Miller, a leading businessman and spokesman for the Committee for Economic Development—probably the most enlightened group of Economic Men in the United States—recently wrote an article entitled “Can We Afford Tomorrow?” He began by saying that no earlier generation of Americans would have asked this.

Such a reaction might have been expected. Ten years ago the most contagious idea around was that the age-old problem of

scarcity had been licked. Galbraith planted the seed with *The Affluent Society*. Expectations, already rising for other reasons, were inflated still further.

Now we see that scarcity was not dead after all; while we were looking the other way, it again has reared its ugly head, more fearsome than ever. No wonder people are pessimistic.

Recently, the president of the prestigious American Association for the Advancement of Science gave an address in which he was asking whether the ever-faster pace of growth, based on scientific discoveries, could continue. This is what he concluded:

. . . so awesome is already the accelerating rate of our scientific and technological advance that simple extrapolation of the exponential curves shows unmistakably that we have at most a generation or two before progress must cease, whether because the world's population becomes insufferably dense, or because we exhaust the possible sources of physical energy or deplete some irreplaceable resource, or because, most likely of all, we pollute our environment to toxic, irremediable limits

. . . in future histories of the world the decade of the 1960's may be known . . . as the time when man, with unbridled lust for power over nature and for a so-called higher standard of living measured by the consumption of the products of an industrial civilization, set in motion the final speedy, inexorable rush toward the end of progress.

In short, the reaction of Social Man to economic growth is that he's been had. Economic Man, he feels, may be a superb producer but a miserable accountant. What kind of an accounting system adds up on the asset side all the wonderful gadgets which the system has turned out but ignores pollution, exhaustion of resources, and

human frustration on the liability side? It is time to put a halt to growth, especially now that reputable scientists say growth is going to come to an end soon anyway. With our minds freed from the compulsion to increase material wealth, to consume more and more things, we can turn the full force of our attention to the social problems threatening to overwhelm us. This, I think, is what Social Man is saying, and I believe he is wrong.

POSSIBLE COURSES

Consider these possible courses for society to follow. Which promises greatest success in solving our social problems?

Course #1 is to *slow* the rate of economic change. Population growth would be zero; the increase in consumption of gadgets would be cut back markedly; resources would be diverted to cleaning up the environment, rebuilding the cities, upgrading education, and otherwise improving the quality of life.

Course #2 is to *encourage* economic growth and change. Economic Man would be given incentives to use technology to raise productivity, generating a rapid increase in incomes. Out of these larger incomes, more would be made available for social and environmental use.

Course #1 may have more idealistic appeal, but it is not very practical. We talk about reordering priorities, but doing it is something else again. I find it hard to see the average American sitting still while a slower-growing pie is being sliced up in a radically different way. He would, of course, benefit from clean water and no ghettos, but the benefit will be hard to see and touch. Perhaps he can be educated to equate a clear stream with a new car, but this would be a long process. In any case, Course #1 would take time; for example, even if every couple started tomorrow to limit its family to two children, the population would not level off for another 66 years.

Course #2 promises more immediate results. It would follow more easily from the path we have been taking; it would be better accepted because it would provide a bigger pie to be sliced up; and it would make greater use of the productive talents of Economic Man. "But," Social Man would say, "how can we be sure this would not lead to even a worse mess than we have now?" Unfortunately, there is no good answer.

Neither Course #1 nor #2, therefore, is acceptable alone. What we need is a course of action that combines the best of both. I shall call this Course #3. We should continue to encourage rapid growth but gradually adopt some of those aspects of the Stationary State which are so appealing to Social Man.

Let me suggest three important requirements for Course #3:

1. Incentives. Economic Man should be encouraged to do his thing. To the extent a free and competitive marketplace accomplishes this, fine. To the extent Government must provide the incentive, this should be done. And to the extent "his thing" may produce undesired social results, incentives should be provided to lead him in the right direction. I have in mind, for example, tax incentives to install anti-pollution devices. This route can best channel Economic Man's energies in directions which Social Man desires.

2. Science and Technology. It is foolish to talk as if we can turn back the clock. A few philosophers may see the results of science and technology as dehumanizing, but most people see them as a miracle that has spared them a great deal of back-breaking labor. In any case, once a scientist has set his curiosity going, I doubt if anyone can turn it off. We shall need all the ingenuity he can bring to bear if we are to develop a cleaner automobile engine or a quieter jet engine. What

must be recognized, however, is that the results of his efforts can be "bad" as well as "good," and that some means must be found to anticipate these results and channel these efforts.

3. Planning. This will require more planning than Economic Man and probably less planning than Social Man would like. It probably means more Government intervention. I see no alternative if rapid growth is not to continue its collision course with pollution, exhaustion of resources, and overpopulation.

The proper emphasis should be not on deliberate slowing of growth but on deliberate planning, for planning may tend to slow growth anyway. For example, the president of American Cyanamid recently reported that

. . . 15 years ago we would have been happy to develop a plastic container that could be profitably marketed because it provided a safe and more convenient package for food or beverage. Today, we must inquire into the plastic's disposability. And if the answer is unsatisfactory, we had better go back to the test tubes. . . .

Family planning will tend to slow down economic growth, although not so much as businessmen might think. Increases in population are not so important to a growing economy as some other things, particularly technology. And in any case, emphasis should shift away from overall growth to growth per capita; this is a much more sensible measure of well-being. Here, too, income per capita need not suffer significantly, and could well benefit, from a slower population growth.

Finally, planning can help to stabilize the economy. Rapid growth will be increasingly unacceptable if it is periodically interrupted by severe recessions. Stop-and-go growth can be the most wasteful use of

resources, human and physical. But to prevent severe waste, it may be necessary when the economy is going too fast to slow it down deliberately for a while in order to sustain growth in the longer run.

CONCLUSIONS

Course #3, with reliance on incentives and technology to *stimulate* growth but also on planning to *channel* it into socially acceptable directions, is more likely to lead us to the Promised Land than is pursuit of the new Stationary State.

Course #3 is a logical next step in the evolution of man's efforts to control his destiny. When Economic Man first applied technology to the satisfaction of human wants, he was rebelling against the blind laws of nature. Social Man wants to take the process one step further; he is rebelling against the blind forces of growth.

A century ago Mill had a visionary idea. He concluded that:

A stationary condition of capital and population implies no stationary state of human improvement. There would be as much scope as ever for all kinds of mental culture, and moral and social progress; as much room for improving the Art of Living, and much more likelihood of its being improved, when minds cease to be engrossed by the art of getting on.

In my opinion, this is something to work towards, but something we are not ready for. Now we need economic growth, and it would be a mistake to try to stop it. But we need to work towards better control of growth. Hopefully, before another century has passed, we shall have grown up to Mill's vision of the Art of Living. ■

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How Well Do Economists Forecast?

by Ira Kaminow

Not long ago, economists, businessmen, and the general public looked on in complete surprise as the Nixon Administration forecast 1971 Gross National Product to be \$1,065 billion. This projection was a good \$15 billion more optimistic than nearly every other forecast around. The "ten-sixty-five" forecast loosed a barrage of attacks and counterattacks as economists began to man the battlements at every point between \$1,035 billion and the "official" forecast. Most took up positions around the "standard" forecast somewhere between ten-forty-five and ten-fifty.

The names of the victors will not be known for many months after the end of 1971 when the final GNP figures are in. But bets must be placed now, by national policymakers, by businessmen, and by householders. Millions of decisions will rest on which forecasters we trust and how much. The stakes are high. An individual who bets on the wrong man might wind up with a new car payment book in one hand and a layoff notice in the other. A businessman

might be forced to watch sales go down the drain because he failed to prepare for booming demand. If our national policymakers follow the wrong prediction, they may spend all their time locking the front door against unemployment while inflation quietly slips in through the back. With all this riding on the quality of our economic foresight, we should learn how to squeeze as much information as possible from predictions.

Some of the most helpful guides to the intelligent interpretation of economic forecasts can be found by taking a hard look at past successes and failures. Only a search of actual experience can give us answers to those important questions that have been asked once again in the wake of the official GNP forecast for 1971. Who has seen the Administration take up its lonely vigil at ten-sixty-five and not wondered how often victory in these things has gone to the maverick, or how often the forecasting fraternity has underestimated the economy's potential? But experience also has lessons to teach that are only incidental to the ten-

sixty-five debate. For example, it can tell us about the success (or failure) of the new econometric forecasting methods and whether any practitioners stand out as being the leaders in their trade.

After we give history a chance to speak, we can assess more intelligently the meaning of economic predictions, especially those for 1971.

TRAILING FORECASTERS

Fortunately, forecasters have left behind a trail of published predictions that can be used to evaluate their past successes and failures. Each year since 1958, the Federal Reserve Bank of Philadelphia has recorded this trail by compiling a list of about 50 published forecasts for the coming year. These compilations provide the raw material for a look at the predictive accuracy of economists.

Unfortunately, not all forecasts listed could be evaluated. First, all non-quantitative forecasts had to be dropped. A forecast of "sluggish growth" does not leave much room for objective comparison with actual

growth. One man's "sluggish" is often another's "rapid." Second, some forecasters were too irregular in their predictions to allow systematic evaluation. After eliminating all predictors whose forecasts were non-quantitative or were made sporadically, the list melted down to 13 forecasters. Of these seers, two were individuals or coordinated teams that made forecasts with substantial use of mathematical or econometric models¹ of the economy; nine were individuals or coordinated teams that made forecasts concentrating on more traditional, less mathematical techniques; and two were forecasters whose predictions reflect a consensus of separate, independently-arrived-at forecasts² (see box).

¹ For a complete discussion of forecasting with econometric models, see Ira Kaminow, "A Noneconomist's Nonmathematical Guide to Econometric Forecasting," *Business Review*, Federal Reserve Bank of Philadelphia, October, 1970.

² The Fed compilation was not always complete and not all the published predictions of the 13 forecasters were recorded. The gaps were filled with information from a variety of sources.

MORE ABOUT METHODS OF FORECASTING

Econometric Technique.

Econometric models are mathematical-statistical models of the economy. Some are used as tools in forecasting. However, contrary to some popular opinion, few people are confident enough in them to accept their forecasts unquestioningly. Consequently, predictions based on computer models contain substantial doses of human judgment.

Traditional Technique.

What we call the traditional technique is really any independent forecast that does not rely heavily on a single econometric model. Traditional forecasters use a wide variety of inputs, such as pure intuition, leading indicators, trend projection, and econometrics, to come up with predictions.

Consensus. Some economists and organizations simply poll other economists on next year's outlook. The average of these forecasts is the "consensus" of the polled economists.

HOW WELL THEY DID: THE FIRST LOOK

The first measure of forecasting success that comes to mind is the average size of the difference between what was predicted and what actually happened. Of the 13 GNP forecasters that we put under the microscope,³ one showed an average error as high as 2.4 per cent of GNP, while another's error was as low as 1.9 per cent on average.⁴ For all forecasters, the average error was about 2.2 per cent. Whether these numbers are large or small depends, of course, on the standard against which they are compared. In terms of economic goals, overshooting GNP by 2.2 per cent could mean that inflation turns out to be 4.2 per cent when 2 per cent was anticipated. Alternatively, it might mean that unemployment turns out to be only 3.5 per cent when we were expecting 5 per cent. Therefore, in comparison with the usual tolerance levels we put on the economy, the typical forecasting error of the '60's could have meant the difference between a "good" year and a "bad" year.⁵

Measuring forecasters against these tolerances is just one way of testing them. Another is to see how well they do relative to the size of the job. It is obviously much easier to forecast accurately when GNP is growing at a steady rate than when its growth is erratic. During the '60's, the aver-

age change in the GNP growth rate from one year to the next was just about equal to the average forecast error (2.2 per cent). This raises the possibility that the professionals do not do very much better than a simple projection of current trends into the future. One trend projection method based on GNP in the previous three years shows an average error of 2.7 per cent. Every forecaster outperformed the simple trend projection method. In some cases, however, the forecasters' leads were distressingly narrow.

THE FORECASTER'S TWO QUESTIONS: WHERE ARE WE? HOW FAR ARE WE GOING?

The sword that cuts down the quality of economic forecasts has a double-edged blade. Predictions of next year's GNP are published many months before reliable figures are available for the current year.⁶ So the forecaster must not only predict how much the economy will grow in the new year, but he must also estimate where it stands at the close of the old one. The forecaster can therefore miss the bulls'-eye for two distinct reasons.

As a rule, forecasters do not separate their forecasts into estimates of the current year's GNP and predictions for growth next year. Therefore, there is no *precise* way to sort out one kind of error from the other. But there is a rough way. According to these rough calculations, the average errors in predicting the growth in GNP were about one-third lower than average errors in predicting GNP itself. In other words, about one-third of the error in predicting next year's GNP crept in because forecasters added their anticipation for growth to the wrong value of current GNP.

The forecasters' greater success in pre-

³ All discussions of group performance are based on whatever data were available from 1959 through 1970. Some forecasters did not start until after 1959, so the early years do not contain data for all forecasters. All official time series used were the latest available at the time of publication and are subject to revisions which might alter some conclusions slightly.

⁴ Details relating to this and other points appear in the Appendix.

⁵ An issue that is closely connected to this point is the relationship between forecasting accuracy and the success of national economic policy. For a discussion of this question, see David P. Eastburn, "Forecasting and Policymaking: Some Lessons from Experience," *Business Review*, Federal Reserve Bank of Philadelphia, April, 1971.

⁶ The bulk of GNP forecasts are made in November and December. Reasonably reliable figures for GNP are not available until the following July. Minor revisions are frequently made several years later.

dicting GNP growth is heartening. For most purposes, we are more concerned with the outlook for growth in GNP than with the outlook for GNP itself. For example, the Administration's predicted \$1,065 billion economy is optimistic only because it implies an \$88 billion growth in GNP. Ten-sixty-five would be less encouraging if it meant a growth of only \$78 billion; this is exactly what it would mean if GNP figures for 1970 were revised upward by \$10 billion.

BIASES IN FORECASTING

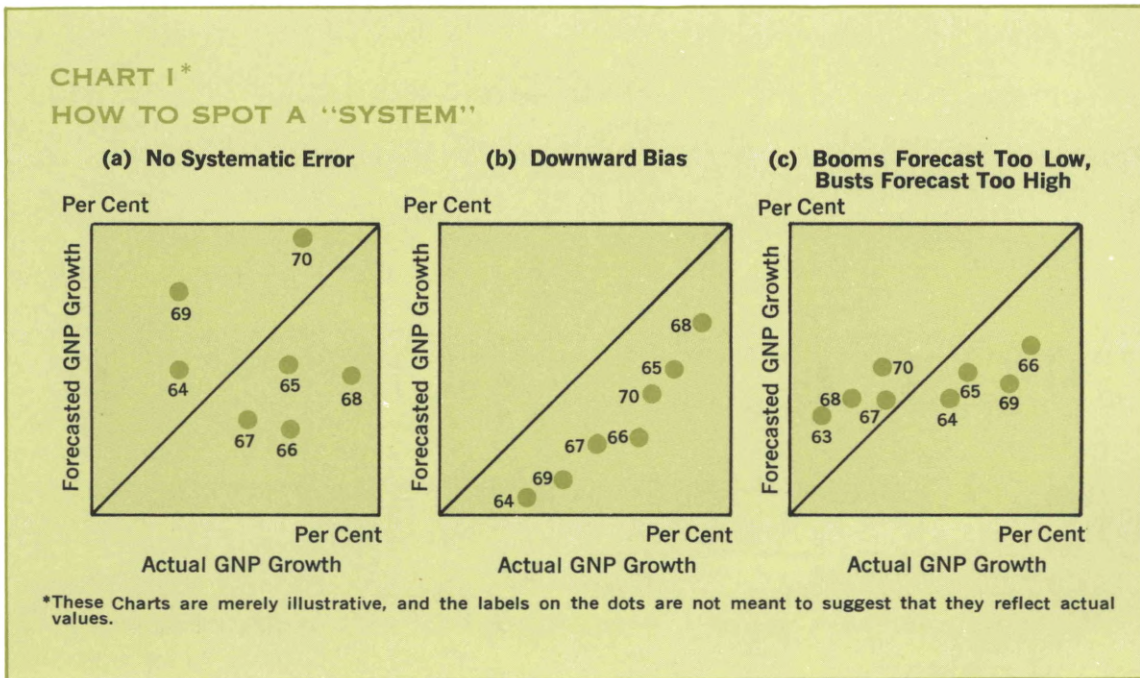
An important question that frequently arises is whether there are any systematic biases in economic forecasts. Most people would agree that if predictions are wide of the mark, it is better for the misses to be systematic because then they can be easily corrected if we can count on the "system" remaining unchanged. Even if we cannot,

however, we have more confidence that a forecaster "knows what he is doing" if his predictions, though incorrect, show some systematic relation to what actually happens.

The difference between random and systematic errors shows up very well on what is called a prediction-realization chart. Each dot in the chart (see Chart 1a for an illustration) stands for one year. The closer a dot is to the top, the higher the prediction for GNP growth in that year; the closer the dot is to the right, the higher actual growth. If a dot lies on the diagonal, it indicates a perfect forecast.⁷ If the dot for any year falls in the upper triangle, the forecast was too high in that year; if a dot falls in the lower triangle, the forecast was too low.

The hypothetical record of forecasts shown in Chart 1a reveals a set of predic-

⁷ All points on the diagonal are as close to the top as to the right side of the box.

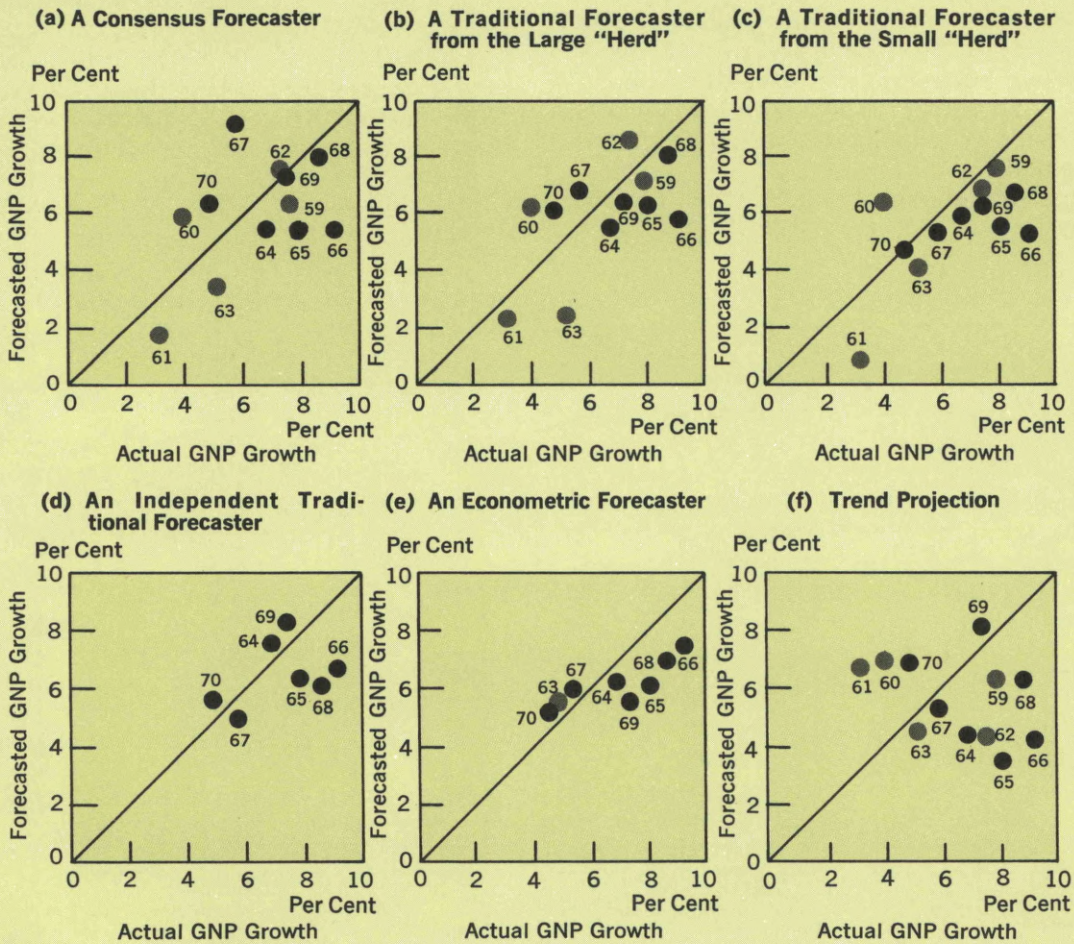


tions that has only random error. In contrast, the pattern of dots in Charts 1b and 1c illustrates the two kind of systematic errors frequently made by our 13 forecasters. The hypothetical forecaster whose predictions are reflected in Chart 1b tends to understate the economy's growth potential. Even though Charts 1a and 1b show exactly the same average error, the forecaster whose

record is written in Chart 1b has done a better job because his *random* error is so small. The forecaster associated with Chart 1c tends to understate the intensity of business cycles. As a result, he aims too high when GNP is sluggishly coasting along, and too low when it is soaring upward.

Chart 2 shows the actual prediction-realization diagrams of five representatives of

**CHART 2
SEARCHING FOR A SYSTEM**



our 13 forecasters⁸ and for predictions based on trend projection. The diagrams reveal the almost universal tendency to understate the growth rate in GNP. The forecasters' tendency to understate rapid growth rates and overstate slow growth rates was not nearly so widespread and did not show up very clearly before 1964. (Dots representing 1964 and later years are darker to highlight this point.)

The tendency towards downward bias was greater for predictions of GNP (not shown) than for the growth rates. The reason for this is fairly simple. There are two wedges driven between forecasted GNP and actual GNP: the error in estimating current year's GNP and the error in predicting growth next year. The former wedge is removed when growth rates are predicted. Since preliminary GNP figures tend to be too low, forecasters usually add their underpredicted changes to an underestimated current GNP. This obviously compounds the bias.

The presence of systematic error in the forecasts is beyond doubt. But how important has it been? If we remove systematic error from the predictions,⁹ the average miss falls by roughly one-third, to about 1.5 per cent for forecasts of GNP and 1.1 percentage points for forecasts of GNP growth. Of course, these statistics merely reflect the amount of bias that existed in the '60's. There is no guarantee that the amount or kind of bias will remain unchanged in the future.

THE BEST AND THE WORST

Investigating forecasters as a group will take us just so far. To squeeze out more

information, we will have to put the 13 forecasters into smaller sub-groups.¹⁰ Much has been said about the "herd" instinct among forecasters—the tendency to make predictions that are similar to one another.¹¹ One way to group forecasters, therefore, is on the basis of the "herds" to which they belong.

Among the 13 forecasters on our range, there are two fairly distinct "herds."¹² The larger of the two includes the two consensus forecasters and four "traditional" forecasters (see box). Although these four did not actually poll other economists, they apparently used techniques that gave results very much like the consensus predictions. The smaller herd consists of three traditional forecasters. The remaining four forecasters seem to be "loners" when compared to the other forecasters in the batch: two of them were "traditional" forecasters, and two, "econometric" forecasters.

Not surprisingly, forecasters that fall into the same groups tend to score the same average misses. The six forecasters in the larger group, for example, tend to do poorly. Four of the six score in the bottom half of the ratings for forecasting GNP, and five of them rank near the bottom in terms of forecasting the growth in GNP. All six of them are in the very lowest rankings when systematic errors are removed; this is true both of GNP and GNP growth forecasts.

Members of the smaller "herd" all have scores that cluster in the medium-to-high rankings. As a group they do decidedly better than the larger pack.

When the final scores are in, the winners tend to be drawn from the independents. But the leaders are so bunched that no sin-

⁸ References in the diagrams to "herds" and independent forecasters will become clearer in the next section.

⁹ Systematic error was removed through regression analysis. Forecasted values were regressed on actual values. The estimated coefficients were then used to linearly transform the published forecasts and the calculated forecasts of change.

¹⁰ Not all forecasters' records extend all the way back to 1959. To provide a fair basis for comparison, we compare only the post-'63 records.

¹¹ This tendency need not mean that forecasters copy each other's predictions. They may simply use similar methods and similar inputs.

¹² This grouping is based on correlation analysis. A table of correlation coefficients among forecasters may be found in the Appendix.

gle forecaster dominated the field during the years we have monitored. If we leave systematic errors in, the best ratings for both GNP and GNP growth were earned by one of the econometric forecasters, but very close behind was an independent traditional forecaster. If we remove systematic error, the successful econometric forecaster again leads in a close race for predicting growth; the runner-up is a member of the small "herd." The award for the smallest random errors in predicting GNP goes to an independent traditional forecaster. Two members of the small "herd" come in right behind, tied for second place. The closeness of all the scores suggests that if the race were run again over some other time period, the rankings might be different.

The fact that one of the econometric forecasters won three of the four first-place awards raises the possibility that this new technique is a major technical advance. Unfortunately, there is not enough evidence to come to a strong conclusion about this question. First, the other econometric forecaster scored lower in the rankings. Second, the quality of any prediction depends to a very large extent on the element of human judgment. There is no way of knowing whether the successful econometric forecaster did so well because of the mathematical model or simply because the human part of the man-math team had superior forecasting ability. The elusive question is whether this forecaster could predict as well without the model as he did with it.

SUMMING UP: LESSONS FOR 1971 PREDICTIONS

There are no foolproof divining rods that point to good economic forecasts. Nevertheless, some hazy signs that may help guide policymakers through the wilderness have begun to emerge. The signs may, of course, turn out to be nothing but mirages. After all, we have taken only a limited look at a few

forecasters for periods no longer than 12 years. But mirage or not, the signs do provide suggestions for interpreting forecasts for 1971.

One suggestion that flows from the twelve-year experience is that "consensus" predictions are not particularly good indicators of the future. We would do well, therefore, to stick with the nonconsensus forecasters. But which ones?

The answer is, of course, "the best." Unfortunately, a second conclusion of our history lesson is that no single forecaster and no single technique—econometric or traditional—stood out as being clearly "the best." Regardless of the criterion, the leading forecaster never did very much better than the runner-up, and econometric forecasters could be found at both the top and bottom of the standings. With no clear leader, it will be best to look at the 1971 predictions of more than one forecaster.

When we look at predictions of GNP, an econometric forecaster had the smallest *total* errors and a traditional forecaster had the smallest errors after forecasting biases were removed. The 1971 GNP predictions of these two forecasters differ by about \$16 billion. This large discrepancy can be almost completely reconciled if we remember another of our history lessons. Forecasters have followed a pattern in the kinds of errors they make; most particularly, they have tended to aim too low. Adjust for these biases, and the gap between the two predictions falls to \$4 billion. One prediction is \$1,057 billion and the other, \$1,061 billion. This close agreement is remarkable if unusual. Perhaps more remarkable is the fact that the average 1971 GNP predictions of the top four forecasters¹³—a "consensus of the cream"—is \$1,060 billion.

¹³ This "consensus of the cream" prediction is the average forecast of the leaders and runners-up in the races for lowest total error and lowest random errors. Each prediction was adjusted for the forecaster's bias as calculated over the period 1959 through 1970.

For most purposes, predictions of GNP growth are more important than predictions of GNP itself. The econometric forecaster that ranked so high at forecasting GNP excelled also at predicting growth, whether measured by total errors or just random errors. His forecast for growth in 1971 is 7½ per cent after adjusting for bias. The “consensus of the cream” forecast is a little higher: it is 8 per cent.

In short, if the traditional biases in forecasted GNP continue into 1971, actual levels are likely to be higher than the so-called “standard” forecast of \$1,045 or \$1,050 billion and while these biases are not great enough to give unqualified support to the official prediction of \$1,065 billion, they do

suggest that the Administration GNP forecast may not be so improbable as many people believe. Things are not so bright when we look at the Administration’s GNP growth forecast, however. Traditional biases suggest that the “standard” forecast of 7 per cent growth rate may not be too far off and that the Administration’s prediction of 9 per cent¹⁴ is too high by at least one percentage point.

But we have almost forgotten the most important lesson of all. Economic forecasts are far from perfect, and all of them should be taken with a large grain of salt—including the ones we came up with here.

¹⁴ \$1,065 billion is about 9 per cent higher than the current estimate for GNP in 1970. ■

APPENDIX

This Appendix is presented for the reader who has an interest in the details of the study. It contains descriptions of the techniques used in making calculations mentioned in the text, the various scores and rankings of each forecaster, and the matrix of coefficients of correlation among the forecasters’ predictions.

HOW TREND PROJECTION FORECASTS WERE CALCULATED

GNP. A regression was run for the ten years prior to each year 1959 through 1970. The dependent variable was current GNP; the independent variables were GNP lagged one, two, and three years. The coefficients obtained from the appropriate regression were then applied to the three years prior to the year for which the forecast was to be made to obtain a forecast based on trend. Since final GNP figures are not available in December, one-year lagged data was always based on the first preliminary GNP data.

GNP Growth Rate. As above, except growth rates replaced levels.

HOW FORECASTS FOR GNP GROWTH WERE CALCULATED

While final GNP figures are not available for at least six months after year’s end, preliminary estimates are published very early in the new year. Even though these figures are published after the prediction season, they probably represent a fair picture of where economists think the economy is on the eve of the new year. By forecast season, the official estimate of the first nine months’ GNP is known. Moreover, scattered information from a variety of sources allows a rough idea of production during the last three months. Consequently, the difference between the first preliminary GNP figures for this year and predicted GNP for next year is a crude estimate of forecasted growth. Any revisions in GNP figures are considered as errors in estimating current GNP.

TABLE 1
ERRORS IN FORECASTS, ALL YEARS

Forecaster	Classification	Years covered	Average error in GNP forecasts as percentage of GNP	Average error in growth rate forecasts
1	Consensus	'59-'70	2.3	1.7
2	"	'59-'70	2.4	1.7
3	Traditional	'61-'70	2.3	1.5
4	"	'59-'70	2.2	1.6
5	"	'61,'62, '64-'70	2.2	1.6
6	"	'64-'70	2.3	1.7
7	"	'59-'70	2.1	1.3
8	"	'61-'70	2.2	1.5
9	"	'62-'70	2.3	1.5
10	"	'59-'70	2.4	1.5
11	"	'64-'70	2.0	1.3
12	Econometric	'59-'70	2.1	1.4
13	"	'63-'70	1.9	0.9

TABLE 2
ERRORS IN FORECASTS, 1964-1970

Forecaster	Classification	In herd with forecasters . . .	Average error in GNP forecasts as percentage of GNP	Rank	Average error in growth forecasts	Rank
1	Consensus	2,3,4,5,6	2.6	9	2.0	13
2	"	1,3,4,5,6	2.7	11	1.9	12
3	Traditional	1,2,4,5,6	2.8	12	1.8	10
4	"	1,2,3,5,6	2.4	6	1.4	3
5	"	1,2,3,4,6	2.6	9	1.8	10
6	"	1,2,3,4,5	2.3	3	1.7	7
7	"	8,9	2.4	6	1.4	3
8	"	7,9	2.3	3	1.5	5
9	"	7,8	2.5	8	1.6	6
10	"	Loner	2.8	12	1.7	7
11	"	"	2.1	2	1.3	2
12	Econometric	"	2.3	3	1.7	7
13	"	"	2.0	1	1.1	1

TABLE 3
RANDOM ERRORS IN FORECASTS, ALL YEARS

Forecaster	Years covered	Average error in GNP forecasts as percentage of GNP	Average error in growth rate forecasts
1	'59-'70	1.5	1.4
2	'59-'70	1.4	1.2
3	'61-'70	1.4	1.1
4	'59-'70	1.4	1.3
5	'61,'62, '64-'70	1.4	1.2
6	'64-'70	1.2	1.2
7	'59-'70	1.2	0.9
8	'61-'70	1.2	0.9
9	'62-'70	1.0	0.8
10	'59-'70	1.2	0.8
11	'64-'70	1.2	0.9
12	'59-'70	1.4	1.0
13	'63-'70	0.9	0.8

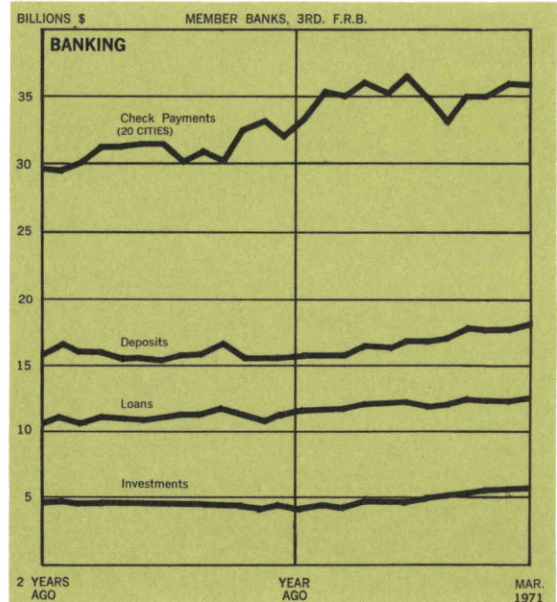
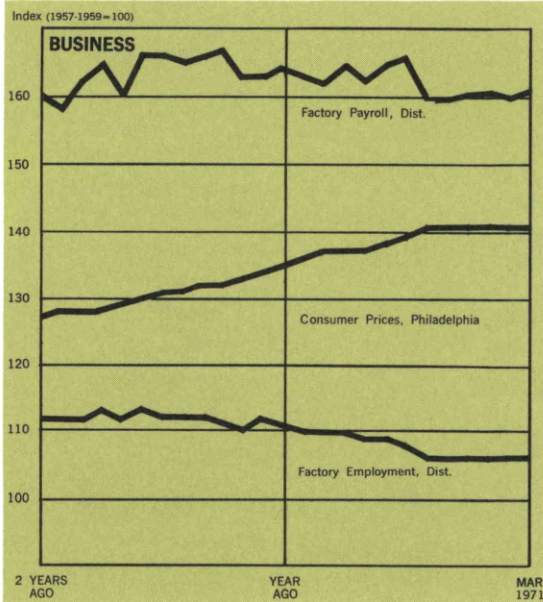
TABLE 4
RANDOM ERRORS IN FORECASTS, 1964-1970

Forecaster	Average error in GNP forecasts as percentage of GNP	Rank	Average error in GNP growth forecasts	Rank
1	1.6	13	1.1	6
2	1.3	7	1.2	7
3	1.3	7	1.2	7
4	1.2	6	1.2	7
5	1.3	7	1.2	7
6	1.4	11	1.2	7
7	1.1	4	0.9	4
8	1.0	2	1.0	5
9	1.0	2	0.7	2
10	0.9	1	0.8	3
11	1.3	7	1.2	7
12	1.4	11	1.2	7
13	1.1	4	0.6	1

TABLE 5
 MATRIX OF CORRELATION COEFFICIENTS AMONG
 PREDICTED GROWTH RATES FROM 1964 THROUGH 1970
 FOR THIRTEEN FORECASTERS

		Forecaster												
		1	2	3	4	5	6	7	8	9	10	11	12	13
Forecaster	1	1.0	0.8	0.6	0.7	0.8	0.9	0.2	0.4	0.2	-0.2	-0.4	0.2	-0.3
	2		1.0	0.9	0.9	1.0	0.9	0.4	0.6	0.3	0.3	-0.2	0.4	-0.2
	3			1.0	1.0	0.9	0.8	0.4	0.5	0.3	0.4	-0.3	0.4	0.1
	4				1.0	1.0	0.8	0.4	0.5	0.3	0.4	-0.3	0.4	0.0
	5					1.0	0.9	0.4	0.5	0.3	0.2	-0.3	0.4	-0.1
	6						1.0	0.3	0.6	0.3	0.1	-0.3	0.6	-0.1
	7							1.0	0.8	0.8	0.4	0.6	0.1	0.5
	8								1.0	0.9	0.4	0.4	0.5	0.5
	9									1.0	0.3	0.4	0.4	0.7
	10										1.0	0.4	0.1	0.2
	11											1.0	-0.4	0.2
	12												1.0	0.5
	13													1.0

FOR THE RECORD...



SUMMARY	Third Federal Reserve District			United States		
	Per cent change			Per cent change		
	March 1971 from		3 mos. 1971 from	March 1971 from		3 mos. 1971 from
	mo. ago	year ago	year ago	mo. ago	year ago	year ago
MANUFACTURING						
Production				+ 1	- 5	- 4
Electric power consumed	+ 6	+ 1	0			
Man-hours, total*	- 1	- 9	- 8			
Employment, total	- 1	- 7	- 7			
Wage income*	0	- 2	- 2			
CONSTRUCTION**	+102	+14	-20	+28	+ 6	- 1
COAL PRODUCTION	+ 3	+ 2	+ 4	+ 5	+12	+11
BANKING						
(All member banks)						
Deposits	+ 3	+17	+14	+ 5	+19	+15
Loans	+ 2	+10	+10	+ 1	+ 7	+ 6
Investments	+ 1	+25	+23	+ 2	+24	+23
U.S. Govt. securities	+ 1	+12	+11	+ 1	+21	+20
Other	+ 1	+33	+32	+ 3	+26	+26
Check payments***	- 1†	+10†	- 2†	- 1	+16	+15
PRICES						
Wholesale				0	+ 3	+ 3
Consumer	0‡	+ 5‡	+ 6‡	0	+ 5	+ 5

LOCAL CHANGES	Manufacturing				Banking			
	Employment		Payrolls		Check Payments**		Total Deposits***	
	Per cent change March 1971 from		Per cent change March 1971 from		Per cent change March 1971 from		Per cent change March 1971 from	
	mo. ago	year ago	mo. ago	year ago	mo. ago	year ago	mo. ago	year ago
Standard Metropolitan Areas*								
Wilmington ..	- 1	- 4	- 3	+ 8	-14	-14	+14	+23
Atlantic City ..					+ 4	+33	+ 5	+30
Trenton	0	- 3	0	+ 3	+32	+38	0	+28
Altoona	0	- 4	0	+ 1	+ 4	+26	+ 2	+12
Harrisburg ...	0	- 3	+ 2	- 2	+ 1	+ 9	+ 4	+12
Johnstown ...	+ 1	- 4	+ 3	+ 1	+ 8	+19	+ 1	+20
Lancaster ...	- 1	- 7	- 2	- 5	+ 7	+ 6	0	+86
Lehigh Valley .	+ 1	- 6	+ 2	- 3	+ 4	+12	+ 2	+17
Philadelphia ..	- 1	- 8	0	- 1	- 2	+14	+ 4	+17
Reading	- 3	- 6	- 2	- 5	+13	+25	+ 1	+14
Scranton	0	- 8	+ 1	- 2	- 3	+ 2	+ 4	+16
Wilkes-Barre ..	- 1	- 2	0	+ 4	+ 6	+12	+ 3	+ 8
York	0	- 5	0	0	+ 4	+ 4	+ 2	-40

*Production workers only
 **Value of contracts
 ***Adjusted for seasonal variation

†15 SMSA's
 ‡Philadelphia

*Not restricted to corporate limits of cities but covers areas of one or more counties.
 **All commercial banks. Adjusted for seasonal variation.
 ***Member banks only. Last Wednesday of the month.