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FORECASTS OF THE ECONOMY AND PRICES

Remarks of

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at the

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"The UCLA Forecast for the  
Nation and California in 1971"

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## FORECASTS OF THE ECONOMY AND PRICES

I was very pleased by the request to speak at this final session of the UCLA 19th Annual Business Forecasting Conference.\* What I propose to do tonight is to discuss the output-price relationships contained in the UCLA forecast and in several other well-known efforts. My conclusions can be summarized readily.

- We have seen presented today by our hosts a forecast of an average rise of 0.8 per cent in unemployment and of 4.5 per cent in prices for 1971 over 1970. To economists, businessmen, and the general public alike, such an outcome for prices and unemployment would be bad news.
- Unfortunately, this forecast does not appear unreasonable in the light of past history. While the amount of price increase is somewhat (perhaps 10 per cent) higher than would be projected by an econometric model using the same unemployment projection, this small difference may be understandable when we take into account recent underprojections of both judgmental forecasters and the principal econometric models.
- What our hosts of today have apparently done is to recognize the extent to which price movements for this coming year are going to be dominated by events that have already occurred in prices, wages, and output. In their forecast, our hosts seem to be paying more attention to the historic record than has been usual in the past few years both in their own previous forecasts and in more general public discussions.
- Whether or not it agrees with our preconceptions and prescriptions, 1971 price movements are likely to be insensitive to the level of spending in 1971. In fact, some econometric models say that our hosts could have raised their forecast of the rate of growth in GNP for 1971 by 20 or 30 per cent and logically could still have projected prices rising somewhat less than the 4.5 per cent now in their forecast. While changes in demand may be critical at or in approaching full employment, when the economy has a fair amount of slack, as at the present, quite large movements in demand will not cause equivalently large changes in current prices.
- This analysis does not, of course, say that a price rise of 4 or 4.5 per cent is inevitable this coming year. It simply says that movements in either direction of spending, output, or employment will not cause prices to deviate greatly from the projection in

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\*I want to acknowledge the assistance of Jared Enzler and James Burnham in the preparation of the statistics and some of the computer simulations on which this analysis is based.

the forecast. A better price result for the economy requires a major shift in the other elements which affect price and wage decisions. Important among these may be how management and labor view past and future price movements and labor-market conditions as well as possible structural changes in the institutions which influence price determinations. Each or all of these may have a far greater impact on price outcomes this year than can movements in demand and spending.

### The Past Record

When Bob Williams asked me to speak tonight, I went back into my files to examine the history of past UCLA forecasts. I found forecasts for each of the years 1967 through 1970. Their overall record appears to have been most satisfactory.

The forecast made last year at this time for 1970 seemed a typical one. The change in the total gross national product for this year was predicted with an apparent error of about \$6 billion. Such an error is about 0.6 per cent of total GNP. While the actual change during the year was underestimated by about 14 per cent, this is not a large error when estimating movements as opposed to totals.

The record can be compared with the average changes predicted by the 36 published forecasts most widely available at the beginning of the year. They overestimated expected growth by \$9 billion or by 0.9 per cent of the total and about 20 per cent of the change.

For the past four years, the average absolute error of the UCLA forecasts was 0.9 per cent. In one year, its projection was off by 1.6 per cent, but in the other three years, the error was 0.6 per cent or less. In these same years, the average error for the available published forecasts was 1.4 per cent--and this amount was equaled or exceeded in three of the four years.

One of the most interesting features to me of this successful record was that the forecasts were prepared in late November--a time when the projectors knew nothing about either proposed or actual monetary policy for the coming year and apparently gave possible changes in money little or no weight. This leads to two interesting hypotheses: (1) the proper monetary policy for next year is so obvious that the average analyst needs no specific knowledge to take it into account; or (2) changes in monetary policy during a year have so little impact on total spending that a fairly good forecast is possible without any need to consider them.

If I were to accept this record as proof of either of these two hypotheses, I still wouldn't know whether to thank or blame Bob Williams and his co-workers. In one case, they would have lifted a good deal of pressure from the Federal Reserve Board. They would have indicated that monetary impacts may not be great, as opposed to the views of many that any action of the Fed has extreme importance in determining spending. On the other hand, they might cause us to feel technologically unemployed if it is true that we simply react to events in the most obvious manner.

Tonight, however, I want to discuss another aspect of these judgmental forecasts. In these past four forecasts, a good overall record has been achieved through overestimating the degree to which real output would increase while underestimating the rate of inflation. For 1970, as an example, the UCLA price forecast appears to have been low by 1.1 per cent while its real output projection was 0.4 per cent too high. In terms of change, it predicted only 80 per cent of the apparent increase in prices. This year's results do not differ greatly from the past four. In each year price movements were underestimated. The average shortfall was 1.0 per cent. The only really poor forecast of GNP was in 1968--the single year in which the price and output errors were not partially offsetting. In that year, estimates of both real output and inflation were too low.

This record of underestimating price increases during this period was, of course, also true of most other judgmental forecasts. This failure to judge the rate of inflation accurately has been common to most observers and analysts. For the past two years, the slow reaction of price pressures to decreased demand has caused constant expressions of surprise.

#### The 1971 UCLA Forecast

With this track record to date, what do our hosts here at UCLA predict for the coming year? They have given us a rather pessimistic outlook. They show 1971 as a better year than 1970, but still not good according to most standards. They forecast an expansion in GNP at a rate of 7 per cent rather than the 5 per cent of 1970. This increased level of spending might be fine if prices were increasing at a more normal rate. Their forecast is pessimistic because the rate of inflation barely slackens.

According to the UCLA prediction, prices will rise by 4.5 per cent --an intolerably high rate to most observers. These price increases are accompanied by a growth in real output, but at only about half the rate of increase in potential production. As a result, unemployment for the year averages the same 5.8 per cent as in November, or a full 0.8 per cent above 1970.

This price-output forecast may be even more pessimistic than it appears on the surface. In the first place, we have already noted that price forecasts for the past four years have all had a downward bias. Will this still hold, or have our hosts corrected by swinging in the opposite direction? Secondly, their output-unemployment projection does not follow Okun's law--one of the more reliable predictors in the past. This economic law suggests that if real output in 1971 is only 2.4 per cent above 1970, unemployment will continue to rise. Its average for the year 1971 will surpass the November level.

### Output-Employment-Price Relationships

Because a rather satisfactory forecast for total GNP is accompanied by such undesirable changes in output and prices, I thought it worthwhile examining the forces at work in this sphere. I have done this by looking at the output-price sectors of some major econometric models. We are interested in the relationships between GNP spending, changes in output, changes in wages, and changes in prices. I shall discuss tonight only the short-run aspects of these relationships which would appear during the course of a year.

As is well recognized, these models express basic economic theory in a logical form. The theory both with respect to components and timing is then expressed in a series of statistical relationships.

I need not stress all of the many strictures as to why the results must be taken with a large grain of salt. Well-recognized technical and theoretical reasons suggest that the results of such models are simply one expression of many possible outcomes which could be developed from this same information.

The Federal Reserve recently sponsored a conference on prices. At this conference, the price-wage sectors of three major models (those developed at Michigan, in the Department of Commerce's Office of Business Economics, and at the Federal Reserve and MIT) were investigated in some detail. Recognizing all of the many problems involved, I still thought it worthwhile to examine these models to see what they had to say about price movements and today's forecast.

On the whole, these models give less pessimistic results than the forecast presented today. Accepting the average 5.8 per cent unemployment rate predicted in today's forecast, the models show prices for the year rising by about 4.0 per cent compared to today's forecast of 4.5 per cent. The models' relationships say that with no change in unemployment, the GNP price deflator in the last half of 1971 should rise at a rate nearly 1.0 per cent less than in the same period of this year.

The Models Show Long Lags from  
Changes in Output to Prices

To many, such a slow rate of improvement in price action, given the high cost of unemployment, would seem most disappointing. Clearly people have expected prices to react more quickly to lowered demand. The majority of forecasts and a great deal of current discussions have been constantly over-optimistic with respect to prices. Apparently the analysts have underestimated both the slow pace at which lowered demand works as well as the large role played by prior price movements in wage bargaining and price setting.

While according to the models, changes in employment play a significant role in overall price determinations, the rate of reaction to unemployment in recent years has been much slower than most judgmental observers have recognized. As an example, according to past relationships the current unemployment rate would over time completely halt any inflation. In fact, if unemployment were to drop to 4.5 per cent, its level would still stop inflation but, unfortunately, the ending of inflationary price increases would occur only after a considerable period.

As an example, take the UCLA projection for 1971 of unemployment at 5.8 per cent or an average increase of 0.8 per cent above 1970. According to the models, only about 45 per cent of the total impact of this increase will be felt in the rate of change of prices in 1971. This rise in unemployment will have as great an impact on prices in the period 1972 through 1974 as in 1971 while 10 per cent of its weight will be felt even later.

Furthermore, during this coming year, the major factor at work in price and wage determination, according to the models, will be past price and unemployment movements. In fact, about 70 per cent of the projected increase of 4.0 per cent in prices (given unemployment at 5.8 per cent) results from the impact on price setting and wage bargaining of prior changes in prices. This relationship is not unexpected. Each new price or wage increase is accompanied by a press release explaining that the increase is mainly a result of past price and wage movements.

This tremendous carry-over into the current year of the influence of past events is, of course, reflected in the models by their comparative insensitivity in a given year to quite large changes in unemployment. For example, one could ask what if unemployment next year were 10 per cent higher than in the UCLA forecast, i.e., if it averaged 6.4 per cent for 1971? The models say this higher unemployment would lower the growth rate of prices by 0.2 per cent next year, i.e., prices would rise at a rate of 3.8 per cent rather than 4.0 per cent.

### The Theory of Output-Price Relationships

These numbers which the models throw out of the computer with such ease are useful only when considered with respect to their theoretical underpinning and their own past record.

Most of the major econometric models assume that a large ingredient of price changes comes from movements in wage rates. How rapidly and to what extent changes in wages get into the price level depends upon how economic capacity is being utilized. Firms do not change prices in exact conformity with movements in their standard unit labor costs. Rather the mark-up or margin between wage costs and prices depends on the state of capacity utilization.

What determines changes in wages? Wage rates in the models are influenced by the amount of unemployment, expected changes in unemployment, and expected changes in prices. Increases in wages will be larger if unemployment is low, has been falling, and prices have been rising. In turn when the economy is producing at or near capacity, a given wage increase will have a greater impact on prices.

Since the model builders cannot measure expectations with respect to prices and unemployment directly, they must use a proxy for this purpose. Their proxy is based on recent changes in prices and unemployment. The relationships are such, however, that expected price increases are not fully taken into account in wage bargaining. As a result, a long-run trade-off exists between the rate of unemployment and the rate of inflation. One model, for example, shows a series of long-run unemployment-price relationships ranging from 7 per cent unemployment accompanied by no price changes to 3.5 per cent unemployment with a 5 per cent price rise.

How good has the record of the models been? In this past year, they underestimated the rise in prices but only by about one-half as much (0.5 per cent) as the judgmental models. More significantly, over the past four years the judgmental but not the econometric models consistently underestimated the rise in prices. I don't have available real forecasts for years prior to 1970. However, the ex post simulations of these models show as many overestimates as underestimates. As a result, while their average error per year is about 0.7 per cent--not much better than the judgmental models--their cumulative error averages only 0.1 per cent a year as opposed to 1.0 per cent for the judgmental models.

### Possible Changes in Past Relationship

As I have stressed, the relationships developed by the models are simply particular analysts' views of the theory and history of output-price relationships. Projections of the future from such models can be wrong

either for technical reasons, or because they make incorrect assumptions of what is happening outside the model, or because the economy changes the way in which it reacts to prior movements in prices and output.

For example, one possible reason price increases were underestimated this year by the econometric models and for the past four years by the judgmental forecasters is that they expected output would grow faster than it did. This did not occur. Except for 1968, output was overestimated. In three of the past four years, the errors in the assumption of real output should have led to smaller not larger price increases. But, of course, this type of error can still occur.

Other variations may arise in more technical ways. Recent price increases fall outside the range of experience in the period over which the wage equations were estimated. A good deal of potential error exists both in the statistics and the equations. Historical relationships may have changed because of new concepts in price setting or wage bargaining or because the manner in which expectations are formed has altered. Any or all of these factors could have caused the models to underestimate wage and price increases this year.

Finally and most significantly, potential change may arise in the sphere of expectations and public policy. While the models estimate relationships from past experience, the relationships picked are recognized to be merely proxies for reality. Expectations are formed in a very complex and only partially understood manner. While they are greatly influenced by the past, they may also be influenced by changed views of the future. Statements of officials, new experience, new bargaining or price-setting regulations may all change both expectations and methods of price and wage setting.

### Conclusion

The past record of these forecasting conferences at UCLA has been good. They have, however, for the past four years underestimated the rate of price increase. Given this year's forecast, if this type of error happens again, we will indeed be badly off. A price rise at the rate now projected if it occurs must be considered an unsatisfactory outcome by most observers--and certainly by all policy-makers in Washington.

An examination of historical relationships from econometric models indicates, however, that given the projected level of output and unemployment in the forecast, the estimated price rise should prove to be somewhat too high. If the econometric models turn out to be correct, the UCLA overestimate of price increases would not, however, be as large as prior underestimates.



An important story which the models tell is that casual observation tends to overestimate the near-term impact on prices of increases or decreases in demand. As a corollary, little evidence exists of any major change in psychology or other factors influencing wage or price relationships. Recent years have witnessed movements above and below past relationships, but thus far they have not exceeded the range of normal variation.

Major changes in price-wage policies may, of course, be occurring or be in the offing. Last year wages and prices rose faster than the models predicted. If the pressures which led to more rapid price-wage increases continue in this coming year, the UCLA forecast would have a greater probability of accuracy than the econometric models. On the other hand, if major changes occur in the climate, structure, or regulation of price-wage policy determinations, then the economy could do better than the econometric models predict and considerably better than the price-output relationships forecast by our hosts.