A Study of the Utility and Validity of Earnings Forecasts

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A STUDY OF THE UTILITY

AND VALIDITY OF EARNINGS FORECASTS

Michael P. Howell

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INTRODUCTION

According to William J. Casey the past Chairman of the Securities and Exchange Commission, and recently appointed Under Secretary of State of Economic Affairs, forecasting should be the first and most important priority of all areas of management and public accounting. It has been the avowed contention of Mr. Casey and various other administrators of the S.E.C., that only large institutional investment corporations have had access to such "useful" information when needed. Consequently, according to Mr. Casey and others, large investors are able to make more objective and intelligent investment decisions. A recent independent survey done for the Financial Executives Institute came to a totally different conclusion than that which Mr. Casey has drawn. It was determined that few investment corporations veritably have access to pertinent internal forecasting models. In fact, when interviewed, many executives claimed that even if they could procure such information, they seriously doubted whether they would rely on it. Most institutional investors surveyed felt that such reports are very short on objectively verifiable fact, and very long on conjecture.¹

Ever since the late 1960's the Securities and Exchange Commission has been holding meetings on the probability of implementing a program of earnings forecast preparation, and publishing. Just recently they
held a meeting on that especially thorny question of public forecast disclosure—a problem whose solution the Commission itself still is not sure of. The question that was entertained by the commission is; whether corporations should be allowed, or possibly, compelled, to issue forecasts of their earnings in prospectuses, proxy statements, or reports filed with the S.E.C. Not only has the S.E.C. entertained notions of disclosing forecasts, but they have also mentioned that the accounting profession may be asked or required, to verify, or possibly assist in preparation of the public forecast reports.

Much criticism has been levied recently by accountants and management alike in respect to the disclosure and publishing of forecasts. But, unfortunately most of this criticism has been directed, at the wrong problems of forecasting. Here are typical opinions about the problems of forecasting: Arthur Andersen and Co. strongly opposes forecasting, due to their belief that it will destroy the independence, that C.P.A. firms so strongly revere. The Business Week issue of November 4, 1972, reports that: "Whether profit forecasts are made compulsory or voluntary, and whether a forecast requirement applies to all companies or only to new issues, the general question has stirred up considerable concern in management ranks. The big worry is liability actions if a public forecast misses the mark, and a shareholder thinks he has been stung. Executives also fear that a forecast gone awry can make them look inept in the eyes of investors."
All of the aforementioned apprehensions are understandable, but all of these criticisms tend to "miss the boat." They fail to pinpoint the paramount issue of forecasting; validity and accuracy. Accountants in theory and also in practice have long adhered to the dogma of "consistency" and "reliability" in their reports. My concern is not only with aberrations from the doctrine of consistency and reliability, but more important with the validity and achieveability of financial forecasts.

The objective of this paper will be to delineate, and disclose, the "shortcoming" of economic (earning) forecasting. If it can be unequivocably proven that forecasting is merely conjecture, and intelligent guesswork, that often is inaccurate, then it is my contention that it will be superfluous for accountants to continually lament their apprehension about financial forecasting. Historically the "crystal ball" techniques of forecasters have proven to be repeatedly unreliable and inaccurate. Some of the preeminent economists in the U.S. have proven to be distantly off base, in their predictions of various facets of economic movement. This will be my departure point, and primary argument. If economists are unable to consistently resolve the quandary of forecasting, how will accountants, even at the micro level, be able to surmount this barrier? If accountants do accept the responsibility of preparing, or verifying, any type of forecasts, I foresee polemicists such as Abraham J. Briloff, the author of
Unaccountable Accounting finding an unlimited supply of contradictions
and "juicy" scandals to entertain the reading public.

The most likely areas of major error in forecasting models are the following:

(1) Errors in Predicting Income Demand Correlations
(2) Low Correlation Between Future of a Particular Firm in an Industry, or an Industry in General
(3) Aggregate Models Traditionally Involve Only One Linear Regression Equation
(4) Internal Forecasts are Consistently Invalid
(5) Extrapolation Techniques and Uncertainties Result in Invalid Observation
(6) Institutional Changes are not Predictable

I would like to discuss each of the aforementioned difficulties of forecasting in brief. Obviously a closer look and analysis of these problems is necessary, but such endeavor is beyond the scope of this paper.

ERRORS IN PREDICTING INCOME DEMAND CORRELATIONS

One of the major difficulties in predicting the change in consumption, relative to the change in income, is the problem of anticipating the expectation of consumers. Two of the more common models of the consumption function are published periodically by the St. Louis Federal Reserve. Here are two such models that are applied. The first is a three year average based on change in price level and the
changes in income \( c=f \) (avg. rate of change in \( P \) and \( Y \)). The second model is the very simplified model of; consumption is a function of income, or \( c=f(Y) \). One must be very careful in utilization of such aggregate models. For occasionally these models are very superficial in predictive value in that they exclude the effect of change in the money supply, and changes in consumer expectation. The effect of changes in money supply would be very easy to incorporate into the consumption model, if one could predict the behavior of the infamous Federal Reserve Board. Seldom since the inception of the "Fed", has anyone been able to foresee, the direction of the "Fed's" monetary policy beforehand.

The second problem of any income consumption model, is much more perplexing, and difficult to define than the impulsive behavior of the "Fed." How do forecasters predict the level of expectation of the consumer? How does one include such a variable in a model? This instability is far from a rarity in the market process. This problem is referred to as the "cobweb" effect in economics. Economists usually can analyze what caused a "cobweb," but seldom can they predict consistently, or accurately, before the fact that a "cobweb" indeed is forthcoming. What "cobwebs" indicate to a forecaster, is that markets need not necessarily produce equilibrium prices. Occasionally at the aggregate, or industry level, management is bewildered by the paradoxical condition of increasing supply and decreasing demand,
augmented by decreasing prices. This is the potentially disturbing effect of changes in consumer expectations in prices and outputs. As consumer expectations do change, the motive of self-interest will drive buyers and sellers in directions that imperil the orderly adjustment of the market place. Often during periods of expected inflation, buyers will purchase in excessive amounts, and drive the price of a good above its market equilibrium, which would certainly make a forecast look good. Conversely, in times of falling prices, if the consumer expects prices to keep falling, what will the buyers self-interest guide him to do? As a buyer, one will not buy more, because one figures, quite correctly, that if one holds off one will get things still cheaper tomorrow. This price decline is further augmented by the apprehension of the seller. As a seller, he will not offer less, because he fears if he does not sell as much as he can immediately, he will get even lower prices for his product tomorrow. Thus, in place of stabilizing reactions, that bring a halt to price changes, or that may even initiate price reversals, when expectations themselves are based on runaway price changes, they bring about behavior that creates the very situation feared. As buyers hold back, and sellers rush forward, the imbalance between quantities supplied, and quantities demanded will worsen, causing a precipitous decline in prices.

What all this means to the forecaster is that he can not be assured, that the market will react according to any model or forecast he may
establish. Consequently, forecasters are unable to make consistent sales forecasts. If there was a means, of including a consumer behavior variable, into a model, then a micro-economic model of income-price-quantity would possess a higher degree of validity, and probability of coming true.

LOW CORRELATION BETWEEN FUTURE OF FIRM OR INDUSTRY AND INCOME OR ANY OTHER AGGREGATE MEASURE

Not all industries, and not all firms within an industry, react to changes in income in a similar manner. A firm within a given industry, should be very careful about changes in income and the effect upon demand for the firm's product. It happens often, that as income is rising, there is a positive correlation for the industry's product, and a negative correlation for the product of a firm in that industry. Also, there have been cases where the national real income has been rising, yet the demand for the product of a particular industry has been decreasing. Essentially, what this implies is that firms should be aware of the possibility of its sales moving in opposite direction to the sales of the industry. Also, it may mean, that a firms' sales may move at a slower rate, or faster rate, than the industry as a whole. These factors are influenced by many variables, such as geographical location relative to the entire industry, variances in income distribution, and local, state, or federal tax law changes.
EXTRAPOLATION TECHNIQUES CAN BE INCONSISTENT

The conventional business forecast presents a detailed analyzes of the individual G.N.P. components, it adds the separate estimates and hence derives a total G.N.P. estimate for the period ahead. The typical G.N.P. model includes the following sectors:

(1) Consumption Sector
(2) Public Investment Sector
(3) Government Sector
(4) Expert Sector

Thus G.N.P. = C+I+G+E. One must be very careful when utilizing G.N.P. as an indicator, because year to year comparisons may not be adjusted and reflect any price level changes. One of the advantages of using a G.N.P. indicator for forecasting purposes is that it will force internal consistency. In other words, by using G.N.P., double counting is avoided and all components of the economy are included.

True, the forecaster will be using an infinite number of estimates that are consistent, but only one is correct. One can make a forecast more logical by precluding inconsistencies, but the use of good logic does not always result in accuracy. The tendency in the past has been for some forecasters to project the known into the unknown, or to extend recent trends of the economy, the industry, or the firm into the future. This extrapolation technique has worked well quite often in the past, but on occasion has experienced dismal failure. Extrapolation works well when movement is in a traditional trend direction, but extrapolation fails.
when profit and prediction accuracy is most needed, at the turning point of the business cycle. Once again the accountant would be confronted with the question of validity and achievability of his forecast.

Under ordinary circumstances, extrapolating past trends may be a reasonable enough way of projecting the future. But unfortunately not always are economic circumstances ordinary: "For example since 1966, the two critical components of growth—increases in productivity and in the labor force—upon which all aggregate forecasts ultimately rest, have departed widely from their long-term trends. Since 1966, productivity growth in the private economy has averaged only about 1.6 percent a year, only half the long term trend of 3 to 3.2 percent. The labor force has shot up by more than 2 percent a year since 1965, a third higher than its long-term trend." Therefore one can rightfully assume that extrapolation of economic growth components is not always valid.

The following data will statistically support my previous contention that extrapolation of G.N.P., or any other leading indicator, need not necessarily result in accurate sales or profit forecasts for a particular industry or firm. In the first quarter of 1972, G.N.P. seasonally adjusted/rose at an annual rate of 12.0 percent. When adjusted for price level changes, the rise was 5.6 percent. During the same first quarter of 1972, the transportation industry experienced a decrease in before tax profits of 2.4 percent. Every first quarter between 1963 and 1972 when there was an increase in G.N.P. (real) the transportation industry experienced
an increase in before tax profits. Why the deviation in the first quarter of 1972? There could be innumerable reasons for this variance. The veritable reason is that extrapolation is not a consistently reliable analytical tool. Extrapolation of one leading indicator, or a combination of leading indicators will not give one an accurate result all of the time. Suffice it to say that projections, and extrapolation, of historical data, and trends for the intent of earnings forecast is an exercise of dubious utility.

Certainly, extrapolation and use of long term trends are not scripts for forecasters that should be followed point by point without departure; as I mentioned earlier in this section. Both G.N.P., and its components, fluctuate somewhat above or below their normal trend, depending on the point of the business cycle that is being analyzed. But when the basic components depart wide margins from their long-term trends for a long period of time, it seems reasonable to inquire about the usefulness and accuracy of the trends themselves as an analytical tool.

Baryl Sprinkel, the noted economist, has had much to say about leading indicators such as G.N.P. Here is Mr. Sprinkel's analysis; "Indicators give what on hindsight prove to be false signals. But unfortunately we search for a foresight mechanism which does not exist." Many attempts have been made to devise mathematical methods of processing leading indicator data, thereby eliminating irregular movements, but
unfortunately erratic movement still remains. Accordingly, Mr. Sprinkel through past research has come to this not so optimistic conclusion:

"The difficulties of using indicators are formidable. In interrupting current changes we are sometimes confronted with false signals, pauses in the underlying trend, variability in the performance of our most trusted series, shifts in attitudes arising from external events, and errors of measurements. However, while the inherent difficulties of forecasting changes in our vast and complicated economy may be reduced, they will never be completely eliminated, so that we shall always have to contend with a sizeable margin of error in our forecasts."  

Do accountants want to take the responsibility of a sizeable margin of error? Will investors accept forecasts that are susceptible to a sizeable margin of error? Would investors be better off if they ignored external earnings forecast? A wise professor of business forecasting, the late Garfield V. Cox, once responded to a student's question concerning how he was able to reach a precise quantification of his views about the future state of business: "I am always uncomfortable with any statistical projection of the future. I therefore choose the statistical projection with which I am least uncomfortable and thereby minimize my discomfort." That is fine for a scholar who wishes to minimize discomfort, but what the investor is concerned with is maximizing profits, and minimizing losses, not necessarily minimizing "discomfort."
INSTITUTIONAL CHANGES THAT AFFECT PROFITS AND ECONOMIC ACTIVITY THAT ARE UNPREDICTABLE

Below is listed a group of variables and indicators that one might incorporate (depending on project) into a simulated model, that can be utilized to get a realistic, and probable forecast of future earnings:

(1) G.N.P., (2) industrial production index, (3) personal income, (4) new order durable goods, (5) bank rates on short term loans, (6) bank rates on commercial and industrial loans, (7) money supply, (8) unemployment rate, and (9) common stock prices; these are just a token sample of the type of information one would need to make a reasonably attainable forecast. But what of the numerous forces that one cannot predict, with any degree of certainty. These unpredictable variables cannot be included in a simulated earnings mode, but can make or break any simple, or sophisticated forecast.

Economic activity may be affected by political developments, both domestic and foreign, that are noneconomic in character, and usually are not encompassed in the indicator statistical system; nevertheless, they have important economic consequences. Representative examples of such non-predictable influences of economic activity include the Korean conflict during the 1949-53 expansion, which turned out to be unusually long, the Vietnam War, which stimulated an unusually long inflation, and the recurring steel and automobile strikes, which severely interrupted production operations and affected earnings of afflicted industries. Even
the threat of strikes may accelerate inventory accumulation, and thus distort the true profit picture.

The aforementioned cases were just a few examples of how unanticipated institutional changes, can alter an earnings forecast. Enumerated below are other potential non-controllable variables to earnings forecast attainment:

1. Wage and Price Controls
2. Federal, State, and Local Tax Changes
3. Wars (including rioting)
4. Federal Reserve Board Actions
5. Unions (contracts strikes, and threat of strike)
6. Legislation; Both Federal and State, i.e. pollution standards in automobile and steel industries
7. International Trade Regulations, i.e. tariffs, quotas, expropriation
8. International Monetary Arrangements

The above are just a random sample of many factors that may cause disparity between a forecast and actual performance.

UNSUCCESSFUL INTERNAL FORECASTS

A recent study on disclosure directed by Frances M. Wheat, recommended against any change in the existing policy of not encouraging the use of forecasts by external users. Wheat concluded in his study that "projections in filed documents might become traps for the unsophisticated
investor who would be prone to attach more significance to such projections than they deserve. Small investors tend to rely on unproven, unemperical types of evidence. The small investor ordinarily does not have the financial capability to have reports analyzed. Investors may have a tendency to place overt reliability on forecasts, even if they are forewarned of the inherent inconsistencies.

How successful have internal forecasts been? That has been a very difficult question to answer, for many companies do not know how to forecast their earnings accurately. "There have been some surveys recently in which corporate executives were asked to gauge their companies' success at forecasting earnings. The conclusion of N.I.R.I., was that, when earnings were estimated a year ahead, only about one-sixth of the companies felt that they could be accurate within 5 percent, and almost one-half felt that they would be off by more than 10 percent. In a more comprehensive survey, conducted for the Financial Executives Institute, 70 percent of the companies said that their internal forecasts were generally accurate within 10 percent. But even in this survey, only 37 percent said that they came within 5 percent, and 13 percent said that they were off by more than 20 percent.

Certainly no C.P.A. firm would care to verify the report of one of the 13 percent companies that was off by 20 percent. A 20 percent deviation from a projection could seriously impair investor confidence and trust in management, and any C.P.A. firm that may publish or verify their reports.
Historically, internal forecasts have not had a very good "batting average." Therefore, I would hope that accounting firms would maintain a laissez faire policy toward forecasting. It would be my guess, that had any accounting firm verified the forecast, of any firm in the oral contraceptive industry in 1970, they would still be trying to get out of Civil Court. Because, the earnings forecast of oral contraceptive firms, in that year, turned out to be an astounding 124 percent high.

**IS FORECASTING FOOLISH**

Based upon evidence that I have acquired, there seems to be but one conclusion and fate for forecasting: failure. That may be a harsh criticism, for certain aspects of forecasting are very useful as internal control tools. Forecasting as it stands now will be neither an effective, nor valid, means of communication between the firm and the external user.

A recent report of a committee of the American Institute of Certified Public Accountants set forth the long-range objectives of the accounting profession. The following "Keys to Successful Data Communication" were provided by its report:

1. The issuer and user must have an understanding as to standards for measurement and summarization.
2. The issuer must have the requisite knowledge and skills to carry out antecedent steps leading up to, and to prepare the communication.
3. There must be absence of bias in communication to a humanly feasible extent.
4. The communication must be intelligible to the user.
The only preceding criteria the accountant is equipped to meet, is number 3. Very few investors have sufficient knowledge to understand the implications, or weaknesses of a sophisticated forecast. Ordinarily, accountants and management do not have the requisite knowledge to construct complex simulated models, that are necessary to have reasonably consistent and reliable results.

"Common comprehension by the profession and the statement users as to these generally accepted principles of accounting was described by Andrew Bar, Chief Accountant for the S.E.C., as probably the most common and basic problem confronting the accounting profession today." Attempting to forecast certainly will not lend itself to a mitigation of this omnipresent problem.

Judge Henry J. Friendly of the Maryland Appellate Court said recently: "Accounting concepts are a foreign language to some lawyers in almost all cases, and to almost all lawyers in some cases." That very statement of the esoteric character of accounting might go like this if accountants were to take part in forecasting: "Forecasting concepts are a foreign language to all lawyers, in all cases, and to almost every investor, in nearly every case." It is very unlikely that accountants will be able to take a highly sophisticated forecast, prepare it in an objective way, and also make it intelligible to the user.

Statement #4 of the accounting board defines the meaning of the seven sacrosanct characteristics of financial accounting, they are:
relevance, understanding, reliability, verifiability, neutrality, timeliness, comparability, and completeness. If accountants volunteered, or were compelled to accept the ominous task of forecast preparation, or verification, it would best serve our purpose to delete all but 2 or 3 of the aforementioned tenets.

It is my belief, that forecasting can continue to serve a useful purpose in preparation of cost budgets. Conversely, it is my strongest conviction, that earnings forecasts, as a supplementary statement to annual reports, will serve no useful or meaningful purpose to the outside user. Such chimera will result in an ineluctable credibility conflict between user and preparer. Who stands to lose the most? Not the firm who sells more stock, not the accountant who obtains additional clients, but the small investor who invests in a glamorized stock, resulting from an inadvertently inflated forecast. The very person William J. Casey intended to protect, will experience the "blunt of the blow."

In closing I would recommend that one does not make the erroneous analogy between the S.E.C.'s recommendation for earnings forecasts, and the United Kingdom's relative success at forecasting. In the United Kingdom accountants only prepare forecasts for mergers and combinations, whereas in the United States the S.E.C. has recommended publication and disclosure of earnings forecast in annual or semi-annual reports to stockholders.
FOOTNOTES


2. Ibid., p. 43-45.


5. Ibid., p. 158-159.


7. Ibid., p. 43.


10. Ibid., p. 73.
Related Analysis As A Tool For Forecasting

Eli Lilly and Company, manufacturers of drugs and pharmaceuticals, have long made use of correlation analysis between sales and a well known leading income series. Study and investigation by company specialists had revealed a very definite relation between the sales of pharmaceuticals and disposable personal income. The company followed this lead and developed a whole system of forecasting based on the relation of sales to movements in personal disposable income.

Industry Type Forecasts

According to forecasters of Eli-Lilly it is usually easier to forecast the sales of an entire industry than it is to forecast the sales of a particular company within that industry. The reason for this is that the foundation of forecasting, the facts and figures, are most generally available on an industry wide basis. Eli Lilly was most fortunate in having at its disposal reliable data on total industry sales on ethical drug sales.

After adjusting both industry sales and the income figures for price changes, the company found through correlation analysis that the following relation existed: for every 10-percent growth or decline in disposable personal income, the industry's sales show a corresponding increase of decrease of about 5 percent. Aside from this influence, analysis of the record revealed a steady rate of growth in pharmaceuticals sales, which the company attributes to constantly increasing expenditures for research and the resulting new major product developments. As long as research expenditures continue to increase and the new products are evolved, the company believes that this trend will continue.

Knowing this trend, and the resulting relationship to personal disposable income, industry sales can be forecast by use of this formula:

\[ \text{Industry Volume} = \text{Income (weighted)} \times \text{Growth Trend} \]

Evidence that is available to forecasters of the drug industry indicates that it is apparent that the company is in a position to derive a forecast of total industry sales when data that is accurate is available on income changes.

Company Forecasts

There still remained the problem of estimating what portion of the forecasted sales of the industry would be obtained by the company. This estimate is obtained by studying the share of the national market the company obtained in past years and projecting the trend of company participation into the future.
In order to do a good job, management feels that the reasons underlying the pattern of past performance must be understood if future trends are to be evaluated properly. In this connection consideration is given to such pertinent details as relative manufacturing capacity, general customer acceptance of the company products, company research expenditures, and the estimated effect of each of these on past and respective sales performance.

The company has reported good success with this method, pointing out that in some recent years forecasts of total company sales, made more than a year in advance, have been within 2 percent of actual sales.

The B.F. Goodrich Method of Forecasting

B.F. Goodrich uses these methods to estimate the demand for passenger car sales. The long-term forecast of passenger car production involves several steps. In the first step the number of cars in use are considered in relation to the nation's level of income. The company's business research department compared the number of passenger cars in operation at the end of the year, for a period of years back to 1930, with the corresponding year's level of disposable personal income, adjusted for changes in purchasing power. It was found that the following relationship existed: for every million dollars of disposable income there were approximately 600 million passenger cars in use.

The second step involves the preparation of an estimate of the future trend of disposable personal income based on certain assumptions as to the nation's potential economic growth. The business research department begins by making an economic forecast of gross national product (G.N.P.) which measures the sum of total goods produced by the nation's economy. Analysis has shown that once the effect of changing price levels is removed the rate at which the economy's output grows depends on four factors: population, the proportion of the population employed in the labor force, the length of the average workweek, and productivity as measured by gross national product per man-hour of work.

For some of these components factors of long-term trends may be calculated and extended into the future. One such factor is output per man hour of work which examination of the record has shown to increase over the years at a more or less regular, and predictable rate. For other factors however, such as size of the armed forces, flat assumptions must be made, based on the best-informed opinion at the time.

Future levels of gross national product are estimated from the resulting projections of man-hours worked and of gross national product per man-hour (productivity). The forecasts of G.N.P. are used in turn to estimate the future levels of personal income. This is made possible because of the close connection between GNP and personal income. Deducting estimated personal income from estimated personal tax payments results in a forecast of disposable personal income.

After these estimates have been made, the company is in a position to project the trend of automobile production.
in future years. Knowing the probable number of cars that will be in use and allowing for estimated scrap-
page the company knows how many cars probably have been produced in order to replace cars scrapped and to make net additions to the nations stock of cars.

As this provides only as estimate of new-car production industry sales forecasts of original equipment tires are derived by applying a factor of about 1.5. The company explains that although new passenger cars are equipped at the factory with five passenger car tires, the original equipment shipment generally exceed this figure somewhat for the reason that these shipments also include passenger car tires on light trucks and the like.

The final step in the preparation of the sales forecast is to check carefully all assumptions and extensions of trends and mathematical relationships used in building up the forecast. In some instances, sound judgment may indicate modifications in statistical results. The forecast is also checked against other projections of general business and the outlook for the industry. All sales forecasts, whether long-run or short-run, are revised periodically in the light of more recent experience.