



Forecasting Methods Successfully Used Since 1928

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units. In some cases these units should be publicly owned and in some cases public supervision might be better. In many cases products could be standardized and the price-spread between producer and consumer thereby lessened. Nation-wide labor exchanges should be established. Unemployment insurance should be provided to prevent suffering among men who are thrown out of work.

The program just outlined is the minimum basis upon which it is possible to eliminate unemployment.

Several persons, speaking from the floor, raised various questions and made comments along a number of lines. One speaker pointed out that unemployment is an international and not merely a national problem and that it is a mistake, therefore, to consider international relations as unimportant.

Barnabas Bryan stated that the fact that unemployment is a resultant of the wage rate and the demand for labor is readily shown by a mathematical computation. If the United States Bureau of Labor Statistics' *Index of the Prices of Commodities at Wholesale* is divided by the average wage of all railway employees—a wage comprehensive enough to show the general level of wages in the United States—and if the quotients derived by this process of division are plotted, it will be found that the curve follows very closely that representing the volume of employment in the United States. Clearly, then, if one wishes to eliminate unemployment, one must vary the wage rate to correspond with changes in the commodity price level.

Leifur Magnusson mentioned the fact that the diversity in the movements of wholesale and retail prices during recent years has been less than has been the case in the past.

Several speakers brought out the fact that, if industry were to build up huge reserve funds to cover periods of depression, these reserve funds would have to be held in the form of cash or marketable securities. If kept in the latter form, the selling of these securities would presumably cause a great decline in their prices and would, therefore, result in a heavy loss to the fund. In answer to this contention it was pointed out that, if the reserve fund were held in high-grade government securities, such as Federal Reserve Bonds, money might be secured by borrowing on these bonds rather than by throwing them on the market.

The latter part of the discussion ranged around the fact that the charges required to maintain unemployment reserves would necessarily constitute a burden upon wages and that the wage earner should not be penalized when he moved from employment in one concern to employment in another concern.

WILLFORD I. KING

FORECASTING METHODS SUCCESSFULLY USED SINCE 1928

A dinner meeting of the American Statistical Association was held on Tuesday evening, April 26, 1932, in the Hotel Governor Clinton, 31st Street and Seventh Avenue, New York City. Two hundred and thirty-three persons were present. Dr. Edmund E. Day, Director for the Social Sciences for the Rockefeller Foundation, presided. The general topic for discussion was "Forecasting Methods Successfully Used Since 1928."

The first speaker of the evening was Dr. Lionel D. Edie, of the American Capital Corporation. He began by pointing out that success in forecasting either the bull market of 1925-1929 or the bear market of 1929-1932 does not demonstrate that the method used by the forecaster possessed any particular merit. In all probability, success was due merely to good fortune.

Before 1929, forecasters relied mainly upon mechanistic systems. The essence of such a system is that it can be communicated to another person who can then proceed to use the system successfully. Such systems are supposed to eliminate the judgment factor. Dr. Edie expressed the view that such methods lead only to futility, for judgment is the really essential feature of every successful forecasting system which is based upon anything other than pure luck.

The speaker illustrated his thesis by citing his own experience in regard to his prediction early in 1930 that commodity prices were destined to fall drastically. He made this forecast because, by talking with the leading central bankers of Europe and America, he had discovered that their mental attitude was such as to lead to deflation. It would be extremely difficult to arrange any mechanical system which would take account of these mental attitudes. Nevertheless, without understanding the philosophies of these bankers, one could have told nothing of what was going to happen.

Dr. Edie stated that a year ago he had predicted that deflation would continue until leaders of the inflationist school gained political control and forced the central banks to increase the supply of money and credit. The deflationists have engineered the depression to date. Now, in the United States, the "wild men of the west" are springing into the saddle and they will strive to direct the course of prices in the future. It is impossible to guess how effectively they can exercise their power.

A few years ago, statisticians everywhere were much interested in constructing very broad composite index numbers, believing that the breadth of these numbers would make them helpful in forecasting. The present tendency is to substitute the atomistic for the inclusive method—for example, if we wish to forecast the volume of steel production, we now attempt to measure each separate item in the demand for steel.

Another method of forecasting which has proven wholly futile is that basing its conclusions upon the composite opinion of the "best" minds. All that this method accomplishes is to warp the judgment of the statistician making the forecast, for the "best" minds usually are as badly informed about the outlook as the man on the street. To succeed, the statistician's judgment should be influenced as little as possible by popular emotion.

The second speaker of the evening was Paul Clay, Investment Counselor. He began by pointing out that white-haired forecasters are rare. He ascribed this situation largely to the fact that, every few years, industry passes from one era to another. In these different eras, different relations between industries and prices tend to prevail. Between 1863 and the present time, we have passed through no less than six such eras.

Mr. Clay stated that, after years of research concerning the cyclical movements of prices, he had built up five rules which he believed to be dependable. Between

1928 and 1931, however, all five of these broke down. The present indications are that this breakdown was caused by the fact that the rules were applicable to some eras but not to others.

Mr. Clay stated that he now felt that, in the past, he had underestimated the importance of the New York Stock Market itself in the industrial and financial affairs of the United States, and even of the world. This market, in fact, constitutes a secondary central bank for the United States, for it is the center at which all values can be liquidated on demand. The movements of the stock market represent the net result of the industry of the United States and a considerable proportion of the rest of the civilized world. Because of this conclusion, Mr. Clay has been led to construct a new index similar, in general, to the Dow theory, but not based upon the Dow methods. This index number he calls a psycho-technical index. It contains five principal elements:

1. A volume index number made by giving the sign of the price movement to the daily volumes, and accumulating the plus and minus movements.
2. Price movements of the twenty stocks having the largest volume of sales on a given day. This item is designed to cover pool activities.
3. A time index number made by adding 1 to the index for each upward day, and subtracting 1 for each minus day.
4. Resistance ratios designed to show the difference between liquidation and short sales.
5. The velocity of movements of stock prices.

The psycho-technical index built out of these five elements looks much like a price chart with the false movements eliminated.

It has the very distinct merit of often moving contrary to the course of the market itself. This index is not used independently, but rather in conjunction with the economic indexes which formerly constituted the chief reliance of Mr. Clay. In most cases, the indications of this mechanical barometer have proven more valuable than any conclusions arrived at on the basis of personal judgment.

The third speaker of the evening was Dr. Lewis H. Haney, of the Bureau of Business Research of New York University. He took the position that business forecasts have hitherto depended entirely too much upon statistical technique and have given too little consideration to the laws of economics. He felt that, though different eras might exist, economic laws ruled equally well in all eras. What the forecaster really needs is an abundance of statistical information and thorough training in economic principles. Unfortunately, in recent years, because of the vogue of "institutional economics" and "business economics," it has been more and more difficult to secure such training. Institutionalism is negative rather than positive in its attitude. It stresses description and exceptions to economic laws rather than the laws themselves. It tends to be "normative." Under the circumstances, the student is not sufficiently trained in positive economic principles. The weakness of business economics is that it gives too little weight to principles and too much weight to statistical facts. It has over-emphasized the use of logarithmic charts and computed trends. These devices often mislead their makers.

To forecast successfully, one must analyze the facts in detail. It is, for example, important to keep track of the ratios of loans to deposits and of reserves to deposits. One must consider stocks of goods, production costs, trade conditions—both domestic and foreign—and everything else pertaining to the problem. It is important to observe relationships between supplies of raw material on hand and market activity. Margins between costs and selling prices are also extremely important.

Dr. Haney pointed out that, as long as business attempted to maintain wage rates at an abnormally high level, there was maladjustment, which was bearish—not bullish. He expressed the view that credit results from business and is not a cause of business. One cannot make more business by putting out more money. The maladjustments of 1929 have not yet been completed. Until this occurs, we cannot look for any sustained recovery.

He held further that empirical methods which depend upon precedent—upon the number of times that a certain relationship has recurred in the past—are inherently unsound. Scientific methods are the opposite of empirical methods. When these are used, there is no need of repeated demonstrations of their validity. One single test of a theory is ample. Economic principles can always be depended upon to hold true.

The last regular speaker on the program was Mr. James F. Hughes, of Charles D. Barney and Company. He explained that he was formerly a student of the relationships between economic activity and the stock market. He still believes that most of the relationships valid before 1928 will be found to hold true in the future. The big boom of 1929 must be considered an abnormality. Speculative enthusiasm caused the public in general to ignore the relationships dictated by common sense.

Even though the relationships between economic causes and market movements are fairly well established, the understanding of these relationships may be of little value to the speculator, for the time intervening between cause and effect is not sufficiently uniform to enable one to predict the turning point with precision, and, without this precision, it is not possible for the speculator to use the forecaster to make any considerable profits. Mr. Hughes stated, therefore, that he had been forced to depend more and more upon the action of the market itself as a guide to the location of turning points. In judging the action of the market, he depends not upon scientific reasoning but merely upon empirical rules based upon precedent. These empirical rules have proven very useful in assisting speculators to gain profits.

Mr. Hughes enumerated a number of the rules which he has found usually to hold good. He has observed that, after the course of the market has changed direction and covered a distance equal to 30 per cent or more of the movement just preceding, one must be on the lookout for a reversal in direction. Thus, after a selling climax in an active market, one should buy at once and sell as soon as the market has rallied by 40 per cent of the last break. When the market has risen for some time, and one of the speculative favorites collapses without any apparent reason, it is wise to sell out at once, for the rest of the market will probably follow.

Recently the market has been largely under the domination of seasonal forces, thus tending, for example, to decline in the second quarter of the year and to rise in the third. We may, therefore, look for a rally during the summer of this year. If business picks up, the rally may develop into a bull market, otherwise there will be another collapse. As a rule, the market rises between Christmas and New Year's. The market has habits because it is dominated by people and people have habits.

The remarks of the speakers were discussed briefly by Victor von Szeliski, of the Lehman Corporation. He pointed out that Dr. Edie was consistent in having no method to offer, inasmuch as Dr. Edie rejected the possibility of objective "indicators," and could recommend nothing better than using good judgment. This is a personal gift, uncommunicable by formula.

As one of the reasons why mechanical indicators so often failed, Mr. von Szeliski suggested that the interval, or time lag, between economic cause and effect was as a rule too small to permit the statistical detection of the cause before the effect followed. With reference to two of Dr. Haney's well-known indicators, the P/V line and the composite steel demand curve, he contended (1) That the former assumed a too simple relationship between P and V , viz., the regression coefficient of theoretical P on actual $V = 1$; thus, in periods of comparative price stability like 1921-1929, the P/V curve is in the main simply proportional to the reciprocal of V alone, and so "leads" the V curve by a half cycle of 1 to 2 years—a relationship observable between any cyclic curve and its inversion. (2) That the latter showed production of steel to have outrun demand for over a year: that this would have resulted in a tremendous inventory of finished steel products, which is not the case. Because steel production is almost wholly governed by specification, it is impossible for any such maladjustment as that found by Dr. Haney to occur. In point of fact, a carefully worked out demand composite does not show maladjustment. (There is maladjustment and inventory accumulation in the metal industry—at the mine, on the docks, in the hands of wholesale and retail dealers—but not where Dr. Haney finds it.)

Mr. von Szeliski denied any conflict between the rational economic approach of Drs. Edie and Haney, and the technical market methods of Hughes and Clay. The former tells *what*, the latter *when*. At least as far as stock speculation is concerned, the translation of our thought into *acts*, into buy and sell orders, must be governed by technical considerations. Economics may load the gun, select the mark, but technics pulls the trigger.

WILLFORD I. KING, *Secretary*

STATISTICAL METHODS IN ADVERTISING RESEARCH

A dinner meeting of the American Statistical Association was held on Tuesday evening, May 24th, at the Hotel Governor Clinton, 31st Street and Seventh Avenue, New York City. Fifty-five persons were in attendance. The chief topic for discussion was, "Statistical Methods in Advertising Research."

Malcolm Muir, President of the McGraw-Hill Publishing Company, acted as