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BUSINESS FORECASTING.

Lecture,

Mr. Baldwin, Babson Statistical Org'n.

November 23rd, 1926.

INTRODUCTORY REMARKS - COL. I. J. CARR, S.C.

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Gentlemen:

In our study of Statistics which we are beginning to touch on in our course we realize its application is a thing that is growing, being used more and more in commercial life, and is used in our procurement activities of the Assistant Secretary of War's Office to a limited extent. It has great possibilities in all industrial lines and in financial lines. It is a thing that is developing and we must take advantage of it in our work, particularly in our current procurement, in balancing production in time of war or emergency, when we have put our procurement scheme into operation.

The Babson Statistical Organization is one of the standards on statistical data and Mr. Baldwin of that organization has come down here today and has kindly consented to give us an informal talk on statistics in general, its use in the commercial world, and its purposes as visualized by the Babson Institute.

I take great pleasure in introducing Mr. Baldwin.

BUSINESS FORECASTING.

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Gentlemen:

I hope you will forgive me if you are expecting a real speech. Colonel Carr originally invited Mr. Babson to address you and he is the only man in the Organization who is prepared to give a real speech. The rest of us do the research work.

I think it would be well to touch on the general features of this service, allowing you to interrupt me at will as such interruptions will not interfere with the program.

I want to talk about statistical services in general. At present the whole field is rapidly changing. The Babson Organization was one of the first it is true, probably the first in the field, at least as far as I know from my studies. At that time it was largely a matter of selling the idea of the use of economics to the public. For the first ten years, as a matter of fact, it was largely a sales proposition and in that respect we rendered a very good service so far as the idea of using statistics was concerned. At the beginning of this service valuable statistics were fewer than those of today so it was not possible to make as good forecastings possible for the average user of the service, enabling him to made specific forecastings from our general ones as of this date. We have now arrived at a period when we have a very large

body of information not only on what we deem essential items but clearly a large body of so-called interior statistics. A great many series of exterior statistics, which were useful when assembled, we find have not been properly used.

There was a rising interest in the field of accountancy. We know this from the growth of the schools, business increasing in cost-keeping along with their development.

Let us bring the matter down to date. I fear that all services have come to the point where they will have to change the type of service rendered. Instead of merely sending out the weekly and monthly material they will probably have to go into the field with a very carefully organized Service Department and help the business man apply these general forecasts which are now being made. If you are at all acquainted with them, you will agree they are more or less general in nature. The Babson Organization makes more specific forecasts than some others, but still ours are rather general.

For instance, it might be said that a certain time will be good for a man to lay in a fair stock of cotton, but as you know, there are exceptions to every statement made; there may be something to say about the character of the seasonal movement of the cotton business, an unusual demand, etc.

At present we are trying to relate forecasting with exceptions to individual business. We find that the average business

man, manufacturer or banker has not reached the point where he can apply such information properly. I doubt if more than twenty-five percent of the clients of all the statistical organizations actually know how to use the services. There is a wastage there; they are not getting full value of the service - where and when to plan - because we have not taught them how to use it.

As to making forecasts, we know that there is no wizardry about it but just a lot of hard work. That feeling still exists in the field, however, particularly among the older men.

The same statistics available to us are available to you. There are some which are semi-fundamental, which are not generally available and on which we spend a great deal of time and money for collecting. The greater mass are generally available and in sufficient quantities to enable you to make a pretty successful general forecast yourself. We are a collection agency for the mass of statistics coming from various sources; we do not do a great deal of research work ourselves - I dare say about seventy-five percent only. We would not need to go further if we had a Service Department, serviced a man, at an additional cost, telling him how to use the service. As I said before, hard work and common sense are considerable factors in this - no wizardry.

There is one point to always keep in mind if you get in a position where you handle a great many statistics and attempt to make corelation with those of similar types. Statistics do not always tell the whole story. Even if we could get all the statis-

tics available that we need to make a very satisfactory forecasting there would still be in our minds a certain element known as psychology that we cannot measure statistically. For example, a certain manager of a very big company in Western Pennsylvania has endeavored recently to attempt to measure what he considers must be psychology in the market; it sounds like a very foolish thing but we believe he will finally do something with it.

Let me illustrate further. In 1919 and through the early part of 1920 we find the most prominent economists and statisticians coming out with the statements that prices will remain at or about the same level for some time to come. As a matter of fact, on the basis of the data available then and previous to that time, and for that available on the basis of the usual methods of making forecasts, those men were right. However, there was one element that they did not take into account, and by the way, this has been a serious argument for our organization. They did not take into consideration what the Purchasing Agent was thinking about the future prices. After all, if you could only find out what the policy of the purchasing agents of the country was going to be, that would be much more important because new statistics arise from post-war situations.

We had trouble in deciding whether we would take the stand of some of the economists or whether we would go to the trouble of sending out a questionnaire among our business friends. We did the latter and it was the one thing that told us definitely that the

purchasing agents were about to restrict their purchases. There were important enough returns sent in to justify us in making the correct forecasting. We were ahead of time, it is true, but even that was best. There we had a situation in which there were no statistics available and we were fortunate enough to come to that conclusion. A lot of times we could have avoided mistakes if we had resorted to the questionnaire method.

Do not depend entirely upon everything you see in print, even though it is from an unbiased source of information. There are other questionnaires that determine very important factors. Probably the questionnaire has been overdone in this country. The average man, in sending one out, makes a long list of questions. Even if answered by a check mark it is bothersome when several hundred are received by an organization, company or individual. Each business man and student should learn to boil down questions as briefly as possible; a much better return will then be obtained. A good sample on a few questions is much better than a poor one on many.

As an illustration as to how lengthy some questionnaires are. Last year we received one with fifty-seven questions; there were others received from banks that bore eighteen or twenty questions. Our policy has been to boil them down to two or three leading questions and in such form that the answer may be "Yes" or "No". I mention that because in our work we may often have to resort to questionnaires, and we want to avoid lengthy ones. I believe that to be a very important point to keep in mind.

The Government Department of Commerce has, in our opinion, done more in recent years to bring to business men the value of business statistics than any other one agency. Unfortunately they are not in a position to make forecasts and some of the series they are reporting are coming out a bit too late to be of use to those who are engaged in making forecasts. We do and have been urging business men to answer fully any questionnaires they receive from the Government, because the Government is in a position to get material that even a private agency like ours cannot obtain. Some types of business men will not answer any questions, some few will not answer a Government questionnaire, but it is generally true that the Government can get more than a private agency.

The Government questionnaires have also been at fault in the past but if you follow their development you will see that they have come to the same conclusions we have. As previously mentioned, the Babson Organization is particularly interested in the questionnaires of the Department of Commerce. The Government, I would say, has about ten times as much statistics on most subjects as we have but not in a form in which it can be readily used. However, it is valuable material and we use it as one of our sources of information.

There are several sources from which we obtain our material. The Bureau of Minerals, Governmental, Federal, and particularly State figures can be used in some instances, but we find that the figures have to be handled with care. That is generally true with

the figures of some of the Western and Southwestern states. That is one source.

Another source is the trade journals. For instance, for a monthly bulletin issued in our office that department has to scan about one hundred and nine trade journals of various types. Again, that is a source that must be watched very carefully. In many instances the trade journal figures are the average, but if you are making a forecast for New York from quotations made at a Western point there is a difference in figures - the difference in a flowing price market, the price they expected to receive and not the one they actually did receive.

Too often when statisticians are making studies, historical studies, they will use figures from trade journals that are not those actually received and they find their forecasting somewhat off. That is a very big problem for any forecasting agency; it means accurate field work, keeping in touch with clients as to what did actually occur.

In using trade journals we find that many agencies, particularly college universities, are apt to file all trade journals with advertising materials. It is best to post vital clippings in commodity groupings and keep down the files.

Another source of information for us is our clients. In every important field we have developed a list of questionnaires for use among our clients. That gives us a very good cross-section

organization. We have to discount some statements, and it is true that at times facts or opinions may be colored, but we soon learn to differentiate between the good and the bad. The older clients know how to handle their returns. In the great mass of returns we get from clients we can easily select the honest opinions. That source is a very important one for us.

Then again we secure material from what we might call correspondence. We do not attempt to develop a large volume of correspondence but try to keep in touch with some various sources in this country and abroad. Close supervision has to be kept on this work. We found one instance where a man abroad was biased in his politics and let that interfere with his business sense. Those things have to be watched very carefully.

I have now outlined to you the chief sources of information. We send men to the field at times on very important topics to gather information first-handed. In the coal strike in Pennsylvania we had people there nearly all the time and we would do the same thing in any other important industrial strike or dispute, particularly if there seemed to be some trouble concerning the commodity markets. We would have a man around most of the time in the centers in which the commodity was important to watch developments.

You cannot have any one set rule or procedure in securing material to make forecastings. Many agencies found that out to their sorrow. You have to have a flexible organization, men that can adapt themselves to various conditions in order to get the

best results.

The personnel problem in an organization of this type is worthy of mention. It is very difficult for us to find a man who is a real statistician and who can meet a business man, obtain desired figures from him, try to sell him the service, advise him of the value of the service, and develop some interchange of materiel between that man and our organization. We have need of such a man because we must send out one that can sell himself and at the same time see what he can getffrom the business man for our own service. We do not get very far. May I remind you of one personnel problem we have settled definitely - that is the sex of the personnel who compile figures in the home office. If you want accurate results you had better use women. You take the average man and put him down to the detailed work and his accuracy usually falls off. Actual tests show what happens; between eleven and twelve o'clock you had better have a girl on the job; she works much better. So far asmmechanical work goes, that is done by girls and not by men. For securing sources of material men are usually used, occasionally a woman but rarely so although one of the best field agents we ever had was a woman who was located in Washington. That is very important to keep in mind when developing a statistical department.

As to some of the features of our service. We do cover a considerable field, both business and financial. Practically every service has, in the beginning, started with its primary interest

in the stock market. That is true with the Babson Statistical Organization. One of the leading services at this time, the Harvard Economic Service, did not but that was an unusual exception. That was natural because the stock market feature was the line of least resistance. In developing profits a body of information was being assembled already sufficient for common market forecasting and these services struck it. In making studies of the stock and bond market they had to refer to the price situation. Following that perhaps I know of at least two.

Then came the development of the sales service. There was a burst in sales effort as yourknow during the war period and immediately following, and then came in a number of services with wide features, an organization of our type dealing with sales operations, making forecastings of purchasing power by states, etc. Finally there developed an interest in labor. This was quickened in the last two or three years by the passage of the Immigration Restriction Act and the field for labor services became very large and today there is a very general labor service. We developed ours before the Act was passed and for a number of years, specially during the war period, made little progress - the greater being made in the last two years.

Some services have gone farther than that. One leading service in the country has developed a strictly agricultural service which is a very valuable one. What the next development will be I do not know.

These services are all related. We have come to the time when we realize we do not know the stock market unless we know the commodity market, and not the commodity market unless we are acquainted with the bond market. You certainly do not know a great deal today about the possible profits of the corporation's selling value unless you are somewhat acquainted with the future purchasing power of the country as a whole and if you want to make a forecast of the next quarter's earnings of some big corporation, and therefore of the value of the stock, you must necessarily know something about the purchasing power of the territory of that company which it serves. Our sales forecasts must be made three months in advance in studying some districts that are most important to the business world.

The labor service is important because we certainly have reached a point where the labor policy of the company has a great deal to do in determining the prosperity of the company over a long run, particularly where a man is buying stock for a long term investment. We think it far more important to know the labor policy of that company. About one-third of the labor service we sell in our organization goes to the investors. That is apparently their interest in watching labor conditions. Labor conditions are also important to the purchasing agent. We have certainly reached the point where we realize the labor policy of a company which is in a peculiar position interferes with the majority of our commodities. The market is very sensitive on that question. Some time ago we made a forecast of a strike which did come true and the forecast

resulted in trouble for us, causing the loss of some of our clients. It is important to know that there has been instances where strikes have occured perhaps in a distant section of the country, but still the strike may spread to the country in which you have placed an order and it may interfere with the delivery of your goods. Those forecasts are more difficult to make because we do not know just what might happen. Still men have saved considerable money in watching labor movements, its disturbances, and protect themselves accordingly. I think I have now shown you the inter-relation of services we use and those of some others.

As to the making of a specific forecast. There is not a set procedure; we have not reached the point where there is a set procedure; it has to be flexible. In my opinion the most important service we issue is the commodity service. We can do more good with the commodity service than we can with any other one if the men would properly use it. You have to have the others and I suppose ours is best known by the stock service, yet far more effort is placed on the commodity service. There is a great mass of material that one has to get, keep up to date on price production and grouping. That is merely a beginning. Give most any man these figures and tell him to make a forecasting from same and that is another matter.

How do you go about making one? There are various phases that enter into the proposition from time to time. For instance,

there are many series of data available on the commodity "cotton", perhaps in the neighborhood of fifty. The price is set in an international market. There is no set rule for making a forecast. Any one of those series may become the most important series at a given time. That means one has to make corelations of a great many of those series with a chart like you find contained in our weekly letter; we would plot prices over this chart; we might determine whether there was any distinct regular corelation between various curves and, if there were, that made our problem a little bit easier but that is only a beginning. It is a mere guide but not the finer means of making a forecast. We have to keep relations up to date because they might be interferred with by other series - therefore they have to be corelated.

We have what we call a "production index" which is somewhat different from the"business volume index" in the way it reaches its conclusions. We find that many times we get in our commodity department the corelations we want by making corelations with this production index published from time to time in the commodity bulletin. We might find that there is some corelation between the general price index, consisting of a large number of commodities, and the prices of commodities. Any number of these things may occur. We have to watch them all and naturally, as you see, there enters an element of judgment; if not we would probably make about ninety-nine percent correct forecastings. That, of course, comes from experience and that is the problem - to get men who can do

that sort of thing. You cannot use judgment entirely, however; if you reach a point where you fear these corelations are not correct go out with a questionnaire. Judgment may be biased. Quote often even though we are supposed to be an unbiased personnel we have a leaning one way or another. I do not have charts to show such corelations in detail, but that is the way in general in which these corelations must be kept up to date constantly, also checked on by sending men to the field in various instances.

I think I can safely say that if we average eighty-five percent in covering seventy-five percent basic commodities we have done a good job. As a matter of fact last year was the best we ever had - about ninety-two percent. That is unusual, however. I should say that if we would reach eighty-five percent every year we would be doing a good job, but the public expects one hundred percent. They will never get it.

Passing on to another service - the sales service. We make purchasing power forecasts by states for three months in advance. In the first place you can readily see such a service would be of little value to an organization that would let out its working plans a year in advance. However we would safely say that ninety-five percent of all business could very well use such a service and too, the basis of that general forecasting is nothing but a check transaction and the whole forecasting is developed on that basis. Why? Simply because we have no better measure of transactions than those individual accounts, no better general measures of purchasing power available. That is correct, but other series are developed

for market conditions, etc. For instance, the general purchasing power, as indicated by the curve of check transactions for three months, might be modified by labor conditions, by employment figures if there should suddenly develop a lessoning of employment figures in the area for which we are making a forecast. There would be a tendency to flatten the curve; you can readily determine how much.

Take for instance the figures on electrical current consumption. That is important now. We actually have collected at times figures for steam car movements which is important in some few towns in this country because it does indicate by hours the movement from the residential section to the industrial section. Postal savings have been credited; postal receipts are important. If you take the men in some local business, it has to be taken into account. There are a number of things which are more or less local which have to be used to route curves of purchase power.

The labor service, as you can readily realize, does not limit itself to statistical plotting nearly as much as other fields. We can get all sorts of facts but what business demands to know is whether a strike is likely to come, whether wages will change and when, and it is very difficult to forecast. However we have been very successful and hope for improvement.

We do publish the only strike index printed at present. It does not include all but perhaps seventy percent and certainly does include the representative strikes in the country so that gives you some information that is of much value. It is interest-

ing to know that at present we are not worrying about strikes; the tendency is to flatten out in comparison with the past.

We also report in that bulletin important welfare plans; we try to keep in touch with all these developments and send out a man to get the data from the field. That work is still in the process of development; we are feeling our way and still it seems to be accepted and seems to be fairly successful in working.

Next we take up the financial service. The organization must be both financial, stocks and bonds. Usually we are best known by the stock market bulletin and that is a bulletin which, perhaps, draws more fire than any other one. We are certainly playing with fire when we play with a stock market so we have to expect that. Bonds are another matter entirely. We are very proud of the fact that the bond bulletin of ours has a good percentage of the banks of the country as subscribers. There is not much of a turn-over in a bulletin of that sort; naturally the biggest turn-over is with the stock market bulletin, the biggest by far.

There is one other point I want to bring to your mind. You may disagree with this theory - a lot do and a great many agree. You have probably seen in our service and other places a curve of commodity prices including a large number of commodities, a curve showing a price movement over a period of one hundred and fifty years. Perhaps you have not realized the significance of it as we see it. Going back to 1789 on this price curve we struck a low point; we struck a high point about 1800 and a high point in 1920.

We are now on the other side, reaching a low point and thereby developing a cycle. There is a similarity between the movement since 1920 and the movement following 1865. In other words it appears that there are these larger price cycles which ~~ev~~very important when one is making large range forecasts and it will necessarily affect short range forecasts because the movement of what we call business cycles are those listing perhaps from one to five or six years. But remember that those cycles are somewhat different - on a gradual decline rather than on a gradual rising level. The character of the cycles between 1896 and 1920 are vastly different from those we have had since that time. We are developing into an entirely different period. If you do not believe in this series we feel that you are going to stray. We think that there is a tendency now, you will agree, for a period of prosperity to be more evident; it is not so promising in the reported movement for 1900 and 1920. In other words, a tendency to stabilize the cycle to flatten out the curve and while no one has kept figures for cycle curves following the Civil War we have carried back such a thing and apparently that was then true. There was such a few series but they indicated that they were going thru the same thing as we now are. If there is anything to this we might be expecting exactly what happened after the Civil War but not in such promising movements.

The Federal Reserve System interferes with many forecasts. Stabilization is one of their great aids. There are other factors about those general price movements. The year of 1789 is not the

limit. This curve can now be carried back thirty years previous to that date. Apparently industrialists have little to do with this, but wars have a lot to do with it.

You notice that the high points above mentioned followed very important wars. We got the price cycle of the battle of Waterloo as well as of the Civil War.

We are carrying on business differently. We have talked about "hand to mouth buying" during the World War and you thought it a new term. I can give you references to business magazines after the Civil War using the same term. The very phrase "hand to mouth buying" was used through 1866 and 1870. We are going through the same thing now and it is to be expected that where the price movement may be gradually downward, with rises here and there, there is going to be more caution in purchasing. In our opinion, perhaps, the most important man in any organization for such a period is the purchasing agent. He can make or break you. Accounting is just as important perhaps but certainly a purchasing agent is much more important than in a price movement of 1920. He has to watch his purchases a bit more carefully and they will do that. The greatest factor has been this "hand to mouth buying" and the widespread knowledge of stocks on hand, and with this we may give history a bit with excess production but we are not going in any period of depression. Again there is no reason for it as long as we act as sensibly as we do now. I think that is important to remember.

When we see the price movement is downward, we would believe the Federal Reserve System will prevent us from reaching such a low point as appraaches danger, and business can be done on a low price if you adjust yourself accordingly. It is not the price level that counts; it is the way you operate in relation to the level. That has not been discovered by a lot of men.