"Business Prophets: The Rise of Business Forecasting Agencies in the United States"

Walter A. Friedman

Harvard Business School

In recent years economists have written a lot about economic forecasting. They have traced the evolution of econometric ideas, analyzed new trends in data gathering, and have focused on forecasting's role in business decision-making.[1]

But, with a few exceptions, academics have paid little attention to the history of the forecasting industry and to the entrepreneurial agencies that made and sold predictions.[2] As a result, while we have a good idea of the theoretical advances of the field, we do not have a sense of the way forecasts were actually produced and marketed, of the individual forecasters who selected data and made charts, and of the way that markets for forecasts were created.

This paper describes the production and distribution of forecasts in the United States in the early twentieth century—the period in which the modern forecasting industry developed. I examine the work of entrepreneurs and academics who sold forecasting newsletters. The history of the forecasting industry itself, as opposed to the theoretical evolution of forecasting methods, is important for several reasons.

One, the market for economic forecasting in the early twentieth century was shaped by a heterogeneous mix of competitors. Entrepreneurs made many contributions to the field. In 1907, Roger Babson developed the first weekly forecasting service in the United States and invented an aggregate data series to measure what he called American "business activity." In 1909 John Moody started a weekly forecasting newsletter that he

(C) Walter Friedman 2010. Draft paper. Please do not quote or cite.

coupled with his own securities ratings company. In 1910 James H. Brookmire created an early leading-indicator model. In 1921, Luther Blake started the first daily business-information and forecasting service, the *Standard Daily Service*. These entrepreneurs, none of whom had been to college except Babson (who went to MIT), also sought out new printing and distribution technology, established the price for forecasts in the market, and relentlessly promoted the importance of economic forecasting to business managers and investors.

The professional economists that became interested in forecasting in this period generally followed the entrepreneurs into the commercial side of the industry. Warren Persons of the Harvard Economic Service developed innovative ways to manipulate statistical data series to remove secular and seasonal trends. Irving Fisher, whose own work in the 1890s pioneered mathematical economics, became, by the 1920s, a leading exponent of the use of index numbers in commercial economic forecasting and he developed a forecasting service based on his own equation of exchange.[3]

Two, the history of economic forecasting also reveals why forecasting developed when it did. Forecasters were part of a larger quest for certainty in the early twentieth century, a time of rapid change and one with economic crises in 1907, 1920, and 1929. The people who came into the fourth decade of their lives after World War I had grown up with financial panics in 1893, depreciating prices in the late nineteenth century, and the rise of large industrial corporations like U.S. Steel (1900). The turbulence of the times was not only about the ups-and-downs of markets, of course, but also about larger questions of political economy. The period witnessed terrible violence against laborers at Homestead, Pullman, and other industrial sites. Violence also came from the radical left

and from anarchists. A series of bombs went off in response to Woodrow Wilson's jailing of dissidents after World War I. In September 1920, a bomb exploded outside the Wall Street offices of J. P. Morgan, killing 38 people.[4] This quest for certainty in all dimensions has been described in historian Robert Wiebe's *Search for Order, 1877-1920* (1966). Contemporaries noted it as well. Walter Lippmann similarly observed this effort to gain control, or "mastery," over a ceaselessly changing society in his book *Drift and Mastery: An Attempt to Diagnose the Current Unrest* (1917).

For their part, business leaders and entrepreneurs in the 1910s and 1920s embarked on a great range of efforts to tame the uncertainties of the market. Sales managers gave salesmen quotas to follow in order to estimate future sales revenue. Shop-floor managers followed Frederick W. Taylor's advice of standardizing work routines in order to estimate future output. Some managers charted the entire workflow process using the diagrams developed by Henry L. Gantt. Those interested in making their hiring processes more efficient consulted industrial psychologists Walter Dill Scott and Hugo Münsterberg or their colleagues. All of these efforts were intended, in one way or another, to make future business operations less haphazard and more predictable.

Three, the history of the economic forecasting industry also reveals the incentives of the individuals who developed forecasts. Forecasters had a variety of reasons for printing their forecasts: some wanted to cash-in by selling them (Babson and Moody come to mind); others had a genuine interest in solving the riddles of the economy (Warren Persons, for instance); and still others (like Fisher) sought to sway public policy in such a way as to improve the efficiency of the marketplace. These incentives are important for making sense of the models that these forecasters developed.

The Problem of Economic Fluctuations

One of the biggest mysteries of economic life has been the phenomenon of business cycles: the periodic fluctuations that caused general panic in one year and an economic boom in another. Why was economic growth uneven and unpredictable? This question engaged some of the most important economists of the early twentieth century, including Nikolai Kondratieff, John Maynard Keynes, Wesley Clair Mitchell, and Joseph Schumpeter.

The problem of economic fluctuations was also taken up by an array of entrepreneurs and organizations that tried to predict the next boom or bust.[5] Several firms, including Cleveland Trust, National City Bank of New York, and American Telephone & Telegraph, published periodic economic forecasts as a sideline to their main business.

Other firms specialized in forecasting, providing weekly or monthly charts and commentaries on economic trends of the U.S. economy. There were no such agencies in the United States in 1900. By 1929 almost a dozen of them existed, publishing a wide range of weekly and monthly newsletters. Among these publications were the Babson Statistical Organization's *Barometer Letter* (started 1907); Moody's Investors Service's *Weekly Letter* (1909); the Brookmire Economic Service's *Forecaster* (1912); Standard Statistics Company's *Daily Trade Service* (1921); and the Harvard Economic Service's *Weekly Letter* (1922). These publications provided forecasts of general business conditions, and they often included other figures, such as forecasts of commodity prices. Another important organization was Irving Fisher's *Business Page*, which appeared in newspapers

throughout the country and contained a weekly commodity-price index and purchasing-power index, along with Fisher's observations about business conditions.

The effort to chart the "ups and downs" of aggregate commercial activity was popularly known as both "business forecasting" and "economic forecasting" and was distinguished from the art of stock-market prediction, which had its own history on Wall Street.[6] Most forecasting agencies sold their forecasts in weekly newsletters offered by subscription for about $100 per year (about $975 today), and they marketed their services through sales forces and paid advertisements in newspapers. Together, forecasting agencies had a combined circulation of about 35,000 in the late 1920s. Babson had 12,000 subscribers; Moody's Investor Services, 10,000; and Harvard, 2,000.[7] Fisher sold his forecasts to newspaper editors and syndicates and hence made them available to the public.

The desire to see into the future was not new, of course, for prediction had always been an aspiration, not just in commerce, but more generally in society.[8] With the rise of large corporations, business executives and managers started to make plans for the coming quarter, year, or several years. Forecasters provided information to managers and investors who contemplated the purchase of large quantities of raw materials, or the expansion of production facilities, or who wanted to calculate sales quotas, or decide whether or not to extend credit to potential borrowers.

Forecasters were part of the rising class of financial analysts (like accountants, brokers, and bankers) who, cumulatively, provided economic information that helped businesses make investment and strategic decisions.[9] They were also part of the business press, which, by the early twentieth century, was supplying information to managers and

investors through various new channels, including news tickers, as well as older ones, such as weekly journals like the *Commercial and Financial Chronicle* (founded in 1865), and daily newspapers like the *Wall Street Journal* (published since 1889).[10]

While forecasters were part of this group of analysts, their goals and methods were unique. They introduced a range of statistical techniques that, taken together, made the effort to look to the future more systematic and the tools to do so, more clearly defined. Unlike accountants, who provided detailed summaries of a company's past, forecasters presented visions of the economic future. This effort was very much at the core of capitalism itself, an economic system that emphasizes change, investment, and innovation, and the future.

In this way, forecasters confronted the uncertainty of the future. One of the best contemporary thinkers on this subject of economic uncertainty was the idiosyncratic economist Frank Knight of the University of Chicago. In 1921, Knight published *Risk, Uncertainty and Profit,* in which he distinguished between risk that was calculable (based on probability) and that which was not, which he labeled as "uncertainty." Risk-based decisions had to do with, for instance, life expectancy (which the life insurance industry was able to calculate) or incidence of fire (which, again, insurance companies had collected significant historical data). The category of uncertain events included fluctuations in general business conditions—as well as other external events, such as wars.

Knight found that uncertainty was pervasive in economic life.[11] He detailed the ways in which economic institutions persistently tried to transform areas of uncertainty into ones of risk and management. This, he argued, could be accomplished through the

gathering of information and the development of expert business systems.[12] The issues Knight raised had to do with information and analysis, but they also had to do with perception: What did people perceive to be a manageable risk and what an uncontrollable unpredictable event? How did this affect their behavior?[13]

Knight's work was not recognized by forecasters at the time, but it arose in the same context. It presents a way to make sense of their contributions. Forecasters attacked the problem of uncertainty in the marketplace in three ways: (i) by creating new data series; (ii) by inventing new ways to manipulate that data series; and also (iii) by attacking the perception of uncertainty in the economy.

Pioneering forecasting agencies

Several forecasting agencies were founded shortly after the turn of the century, following the panic of 1907, a financial crisis that was particularly perplexing to many investors, businessmen, and business analysts. Contemporary wisdom in financial circles assumed (not for the first or last time) that panics were a thing of the past. "The opinion . . . entertained by . . . banking experts," wrote financial journalist Alexander Noyes in 1909, ". . . was that 'aggregation of banking resources' and 'coordination of industry' had, between them, created a new economic situation, where old-fashioned financial and commercial panics . . . would be no longer possibilities."[14]

The founders of early twentieth-century forecasting services were primarily entrepreneurs who had worked in finance early in their careers. Roger Babson, of Wellesley, Massachusetts, had sold bonds for a firm in New York City and then for another one in Boston before founding the Babson Statistical Organization in 1904. After

seeing many of his clients lose money in 1907, and inspired by the example of Samuel Benner, Babson started a forecasting service. He began to publish *Babson's Reports*, promising to tell readers "*when* to buy and *when* to sell; and *what* to buy and *what* to sell."[15]

In 1910 James Brookmire, of St. Louis, organized the Brookmire Economic Chart Company, which printed colorful, oversized charts on a range of subjects, including "pricing cycles" of hardware, steel, and iron, and also a "business barometer" of overall economic conditions. Brookmire was the son of a prominent St. Louis grocer, who, after working in the family firm for several years, became a partner in a stock-brokerage firm, Simon, Clifford, and Brookmire. He began making economic charts, using an early leading-indicator method, primarily as a way to attract clients to his firm.[16] He moved the service to New York in 1916.

John Moody worked ten years for the investment firm Spencer Trask, beginning as a self-described "stamp licker," before becoming the head of their statistical department. Moody left the firm to publish his now-famous industrial manuals in 1900, but lost control of them in 1907 (to Roger Babson) due to his poor investments in other businesses, including a silver mine, a newspaper, and an expensive printing facility. In 1909, Moody re-entered business, founding the Analyses Publishing Company (later part of Moody's Investors Service), a securities-rating business, and publishing a *Weekly Letter*, which contained forecasts of economic activity.

Luther Lee Blake, originally from Fayetteville, Tennessee, was employed by a Nashville brokerage house as a telephone operator and then as an analyst for the New York investment bank Laidlaw and Company. In 1906 he founded the Standard Statistics

Bureau, which delivered information on securities offerings to individual clients by messenger on a daily basis. In 1921, Blake started the *Standard Daily Trade Service*, a newsletter that offered frequent economic forecasts.

All four of these individuals were highly entrepreneurial, starting several companies each in the late nineteenth and early twentieth centuries. Forecasting was Babson's and Brookmire's main activity in the 1910s; Moody and Blake both operated large business-information companies, which offered forecasts as only one part of their overall business activities.

The Growth of the Forecasting Industry

The number of forecasting agencies grew substantially during the 1920s for several reasons. World War I was a watershed event in the history of economic forecasting. The city of Washington, D.C., was a magnet for all sorts of social scientists, including psychologists, economists, and statisticians. Among them was the economist Wesley Mitchell, who helped create a number new indices, especially for commodity prices.[17] After the war, the amount of statistical series available to business managers and investors was much greater. In 1920, statistician Malcolm Rorty of AT&T, economist Wesley Mitchell and economic historian Edwin Gay (all of whom were involved in the war-planning effort) founded the private, non-profit economic research center, National Bureau of Economic Research. In 1921, Herbert Hoover, Secretary of Commerce, worked with NBER to produce the government publication, *Survey of Current Business*, which provided statistical data and economic analysis to the public; Hoover hoped the *Survey*

would improve managers' ability to make prescient decisions and thereby reduce the likelihood of unexpected economic panics.

Also important to the growth of interest in forecasting in this period was the short, but sharp, deflationary recession from January 1920 to July 1921. Business executives a number of companies, including General Motors, AT&T, and Macy's invested more heavily in statistics and forecasting.[18]

In the early 1920s, academics entered the business of selling forecasts. In 1922, the Harvard Economic Service began publication of its *Weekly Letter* on overall economic conditions. The service was funded by the school's Committee on Economic Research (founded 1917) and was run by economist Charles J. Bullock, a specialist on tax policy and on trade; it was part of the university's broader effort to improve the scientific quality of the discipline of economics.[19] Warren Persons devised the forecasting model for the Harvard service. Persons had completed a doctorate in economics at the University of Wisconsin in 1916, writing on wealth and income distribution.[20] His work attracted attention for its application of statistical precision to questions of economic fluctuations, and it eventually led to his appointment at Harvard.

In 1923, economist Irving Fisher, of Yale, organized the Index Number Institute, which sold a commodity-price index and a purchasing-power index to several newspapers, including the *New York World*, the *Philadelphia Inquirer*, the *New York Journal of Commerce*, the *New Haven Union*, and the *Hartford Courant*—though he had been publishing forecasts since 1911. By the mid-1920s, Fisher had expanded this service to include a stock-market index and short, opinionated articles on current economic topics, including future trends. He packaged the whole service as "Irving Fisher's Business

Page."(Only in the 1930s, did he begin his own short-lived weekly newsletters: *The Financial Analysis Service*, *Trade and Money Index*, and *Market Indicators*, none of which lasted more than a couple of years).

These individuals (Babson, Brookmire, Moody, Blake, Persons, and Fisher) were only the best-known of the forecasting field. In the 1920s, several others also produced regular predictions of general economic conditions, including Ralph Mitchell Ainsworth of Ainsworth's Financial Services, Carroll Tillman of the Tillman Survey, C. G. Selden of the Selden Service, J. George Frederick of the Business Bourse, and Kenneth Stevens Van Strum of the Van Strum Financial Service.

Methods and Markets

Forecasters developed different types of methods for making their predictions. Some did not formulate, or at least did not publicize, a specific forecasting model. In fact, John Moody and Luther Lee Blake at the Standard Statistics Bureau, claimed not to follow a specific model at all. Lawrence H. Sloan, who edited Blake's newsletter, the *Standard Daily Trade Service*, noted, "We hold that the conditions of every major business swing are different, and that it is these constantly altering conditions, rather than theoretical expectancies, which should be given the greatest consideration."[21] But other forecasters were more open about their approach.

Roger Babson. Babson believed that the economy went through discernible cycles, which he broke down into phases of prosperity, decline, depression, and improvement. He gathered information on twenty-five data series—nearly all those available to him at the time—which included a hodgepodge of statistics on manufacturing output and other

industrial production figures, as well as immigration rates, and commodity prices. These data came in widely different units (from pounds to prices), so Babson found a way to combine them by developing an index scale for each series, based on annual percentage change.[22] He then created an aggregate number representing "general business activity." Although Babson's methods were crude by modern standards, they did represent an important step, in the years prior to GNP, toward creating a single figure to serve as a proxy for the business activity of the entire economy. Babson plotted his aggregate data series of charts, called Babsoncharts, which displayed undulating periods of expansion and recession.

Babson had pseudoscientific leanings. He had a fascination for Sir Isaac Newton and tied the great scientist's work on gravitational pull to the problem of forecasting.[23] Babson claimed that the economy operated according to Newton's law of equal-and-opposite reactions. "[A] period of business prosperity," Babson wrote, "would be followed by an equal and opposite period of depression." Using this logic, Babson devised an "Area Theory" of the business cycle that, he claimed, revealed how periods of prosperity were followed by periods of recession—the latter depicted in gray on his chart. Babson believed that, in order to make an accurate economic forecast, the duration of a period of recession should be multiplied by its severity (Time x Intensity = Area); this "area" of recession, shown using his aggregate series of business indicators, would then be matched by an equal "area" of expansion. In other words, a sharp, short recession could reasonably be followed by a similarly sharp, short expansion, or by a shallow, long-lasting one—the product of the severity and duration being the same.

The appeal of Babson's aggregate chart to readers was that it seemed to indicate, in a quick glance, whether the country was headed for depression or expansion.[24] His chart also included an X-Y line for secular aggregate growth, which was purposefully situated to make the areas of expansion and recession equal.[25] This all might seem like "hocus-pocus" (as John Kenneth Galbraith called it), but part of Babson's appeal was that he created a forecasting method that accorded well to how many people implicitly think about the economy: It generally grows. Sometimes it grows too fast and sometimes too slow. In the long-run, this evens out.[26]

Warren Person. Rather than using a single aggregate series to form his predictions, Warren Persons of Harvard developed a "lead-lag model." Persons's based his forecasts almost entirely on historical statistics. Unlike Roger Babson, Persons did not believe business cycles to be of fixed duration or follow any natural law. Instead, Persons developed an approach to deciphering cycles based strictly on empirical observation. In 1916, he published in the *American Economic Review*, "The Construction of a Business Barometer Based Upon Annual Data," which outlined his forecasting method.[27] Persons investigated the relations between twenty-three independent data series for the years 1903 to 1914. Using his own pioneering statistical methods, he adjusted these data series for seasonal variances and for secular growth, which, he believed, allowed him to see any real cyclical variances in the series more clearly.[28] He then charted the remaining wavelike movements of the data series and grouped them according to the chronological order of occurrence. "[*C]ycles* are the undulating curves, or numerical values, secured by removing from the actual items [being studied] the secular trend and the seasonal variation, and expressing the results in terms of comparable units," Persons explained.

"The actual figures thus corrected and expressed measure the rhythmic movement of business, the ebb and flow corresponding to depression and prosperity."[29]

By looking at the relation of different economic series during the period 1903 to 1914, Persons noticed a distinct pattern: while all factors in an economy were affected by the highs and lows of a business cycle, they did not move up and down simultaneously. "Some factors appear to lag behind, rising and falling many months after the rest," a Harvard Economic Service report of 1923 noted. "Other factors appear to lead the movement; they begin the rise and they begin the fall; they can be used to suggest when the turn of the cycle from rise to fall or vice versa is approaching."[30] Persons divided his economic data series into three large groups: speculation (for instance, shares traded on the New York Stock Exchange and prices of industrial stocks), business activity (commodity prices and pig-iron production), and banking (deposit levels and rates on commercial paper).[31]

Persons concluded that a relation existed among these three areas of the economy: speculation, business activity, and banking. He argued (1) that the major fluctuations of *speculation* anticipated those of *general business* by from four to ten months, and (2) that the major fluctuations of *general business* preceded those of *banking* by from two to eight months.[32] Persons then constructed a chart for the Harvard Economic Service that displayed three curves representing these different aspects of the economy: A-speculation, B-business activity, and C-banking.[33] Persons did not advance a theory to explain why this relationship held. Instead, he insisted, instead, that his purpose was simply to reveal his statistical results without theoretical bias.[34]

Irving Fisher. Fisher, by far the most accomplished economist and mathematician among the group of pioneering forecasters, produced a forecasting methodology far different from those of Persons or Babson. Fisher disputed the idea of a business cycle altogether, calling it a "myth," because it "lacked periodicity, had no cyclical rhythm and hence was no true cycle at all."[35] Fisher did not search for historic sequences in economic rhythms, as Persons had done, but looked rather for the cause-and-effect of economic change. Fisher's triumph was in describing fundamental economic relationships in mathematical terms.

Fisher saw economic fluctuations as monetary in origin: changes in the amount of money in circulation changed prices, which in turn affected the volume of production. The correct way to analyze the misnamed "business cycle" was to employ the equation of exchange, which Fisher put in mathematical terms in 1911 as (MV = PT) and which he quickly perceived as a forecasting tool.[36] The equation showed that the stock of money (*M*) in the economy multiplied by the velocity of money (*V*) was equal to an index of the average price level (*P*) times the total number of transactions (*T*). Put in other words, the level of prices varied indirectly with the stock of money in circulation, if one assumed a constant velocity of circulation and quantity of trade.[37]

Fisher, generally, believed that a prolonged or dramatic fall in the price level foreshadowed a depression, whereas a similar rise in the price level suggested improved conditions in the future. Business fluctuations resulted in part from the imperfect adjustment of interest rates. When prices rose, Fisher argued, interest rates were slow to respond; hence, real interest rates fell. Spurred by these artificially low rates, businesses invested excessively. When interest rates finally began to rise again, a series of events

occurred: the volume of borrowing diminished, the value of bonds declined, loans could not be renewed on the old terms, and some companies found themselves unable to make interest payments. Banks called in their loans and the money supply became contracted, causing prices to fall and the process to start over.[38] Unlike other agencies that sold forecasts directly to subscribers through newsletters, Fisher's idea was to sell his forecasts and indexes to newspapers. Fisher hoped these newspaper columns would reveal to businesspeople, policymakers, and the general public changes the purchasing power of the dollar—and spur public efforts to stabilize the dollar.

*

While these quick summaries cannot do justice to the different approaches of Babson, Persons, and Fisher, they do provide a general sense of the development of forecasting—and more specifically forecasting models, which can also be quickly seen by looking at the graphs they produced (at the end of the paper).

All of these forecasters created models that were divorced from the activities of individual firms. This is striking because the early twentieth century was a period when powerful businessmen dominated entire sectors of the economy: J. P. Morgan in banking, steel, and telecommunications, Andrew Mellon in aluminum, Henry Ford and Alfred Sloan in automobiles, and John D. Rockefeller in oil. The models developed by forecasters took none of this into account, despite the fact that many of the forecasters (including Moody, Babson, and Fisher) were deeply knowledgeable about these industries. All forecasters, however, believed that the economy was simply too vast to have general levels of business activity be affected by the actions of individual firms or a cartel of firms.

Indeed, forecasters helped to legitimate corporate capitalism in a period filled with investigations of large trusts and muckraking accounts of robber barons. Forecasters seldom wrote about swindles or strikes. Nor did they highlight the irrational characteristics of individual businesspeople. Instead, they presented the marketplace as a series of equations or lines on charts. They described capitalism as answerable to natural laws (in the work of Babson) and to mathematical truths (in the work of Fisher).

Moreover, the rise of the forecasting industry took place with little evidence that forecasts were accurate. Large-scale efforts to assess the accuracy of forecasts were not published until after the 1929 stock-market crash—and they were highly negative. In 1933, Alfred Cowles III, son of a wealthy publishing magnate, published an analysis of stock market forecasting in the journal *Econometrica*. Cowles looked at stock market predictions made by 24 financial publications for the period from January 1928 to June 1932, and concluded that they "little, if any, better than what might be expected to result from pure chance."[39]

The lack of information on accuracy in the 1920s did not detract from what some felt was a general sense of optimism about the usefulness of forecasts by businesspeople. "Many a businessman is developing the precipitate zeal of a new convert and talking about cycles as if they came around with the regularity of presidential elections," wrote Wesley Mitchell in a 1923 article in *The Journal of Accountancy*. "Not a few forecasting agencies are publishing prophecies as if they had the certainty of history."[40] This sense that cyclical swings had somehow been solved helped to fuel the dramatic boom in share prices that started in 1927.

Decline of Business Barometers

The 1929 stock market crash changed the forecasting industry–not only due to the failure of nearly all forecasters to predict the event, but to their repeated predictions of a return of prosperity in the weeks, months, and even years afterward. An inclination toward optimism had served forecasters well in the 1920s but ruined many of them in the 1930s.

Roger Babson was one of the few who claimed to have predicted the October 1929 crash. On September 5, 1929, more than a month prior to it, Babson gave a speech in which he warned of an impending sharp drop in share prices on the New York Stock Exchange—saying "sooner or later a crash is coming which will take in the leading stocks and cause a decline of from 60 to 80 points in the Dow-Jones Barometer" (at a time when the index stood at about 380).[41] In fact, Babson had been making the same prediction for several years.

Most analysts in the late summer of 1929 were relatively optimistic about the coming fall. The Harvard Economic forecasters reported "sentiment remains confident, and it is to be anticipated that fall trade will bring some stimulus to general business."[42] Irving Fisher famously said that significant gains in the real economy had brought stock prices to a new and permanently "high plateau" and that investment trusts had reduced the risk of investing. "[T]here may be a recession of stock prices but not anything in the nature of a crash," argued Fisher. "We are living in an age of increasing prosperity and consequent increasing earning power of corporations and individuals. This is due in large measure to mass production and inventions such as the world has never before witnessed."[43]

Many forecasters recalled the 1920-21 recession and assumed that the current situation would be no worse. The Harvard Economic Society remained optimistic in 1930 and was criticized on several occasions for its failed predictions in the school's Alumni Bulletin.[44] The A-B-C curves on the Harvard chart were increasingly out of synch. By December 1931, the depression had lasted longer than the downturn of 1920–21, which Harvard had seen as a historical model. The Harvard group noted the complexity of the economic situation was compounded because of the international nature of the problem and admitted that they did not have "adequate grounds for forecasting business revival." The service dissolved in December 1931.

Irving Fisher was even more optimistic than the Harvard forecasters during 1930 and 1931.[45] Fisher revisited his predictions in *The Stock Market Crash – and After* (1930), and outlined many reasons for the real improvement in the performance of companies, among them that "industry had found that in its research laboratories, staffed by scientists from the universities, was the most profitable investment ever made."[46] Meanwhile, he tried to expand his forecasting services, but with little success. In 1930, he began offering the *Financial Analysis Service*, which was quickly succeeded by the *Trade and Money Index* the following year, and then by *Market Indicators*, which was published only until 1934.[47]

After the 1929 crash, Babson promoted himself as a "seer." He publicized his forecasting service heavily in the 1930s, placing "Be Right with Babson" signs in New York subway cars. He recruited students to his college, founded in 1919, in Wellesley, Massachusetts, and began writing self-help books. He also became more politically

active, and in 1940 would run for president of the United States as head of the Prohibition Party.

What accounted for the general decline of the pioneering forecasters? In the 1920s, forecasters encouraged the idea that they had discovered inviolable rules of the marketplace. This brought out among readers, eager to absorb this information, the sense that the puzzle of the economy was "solved" and that the future was "manageable." To return to Frank Knight's terminology, managers and investors acted with optimism that uncertainty had been removed.

An opposite perception problem developed during the 1930s when some investors and managers began to trust *none* of the forecasters. Worse, people came to believe that the signals sent from the forecasting and policy-making experts were corrupt. The student newspaper at Harvard accused the economists of the Harvard Economic Service of making falsely optimistic forecasts in order to please the school's alumnae. Similarly, economist Garfield V. Cox argued that business forecasting services released overly optimistic forecasts because they were fearful of antagonizing clients.[48] In his history of the 1930s, Frederick Lewis Allen observed that the public had become similarly wary of president Herbert Hoover's prosperity propaganda.[49] Such a level of corrupt signals is disastrous for capitalist economics, helping to bring about a period of uncertainty and hence a stopping of both investment and consumption.

The notion that the system was broken (and corrupt) was furthered in 1933 by Alfred Cowles' devastating and public attack on the industry, which argued that forecasters were not better at predicting the future than random forecasts picked from a deck of cards.[50]

Forecasts are informed guesses—part art and part science. A big part of them is the idea that the economy is going to operate in the future in a way similar to the past (what could be called "normal" times). But this is a fragile system. Because forecasts are highly simplified models of the economy, they can never be perfect. If a forecaster fails repeatedly, people can lose faith in him or her, but after a large unperceived shock, people can lose faith in the entire industry, with the result that society enters an age without forecasts, in which uncertainty and paralysis reign.

While the failure of the forecasting industry to foresee the continuing blight of the depression years brought an end to several forecasting agencies (including the Harvard Economic Service) and discouraged others from publishing forecasts (like Moody's), it of course did not bring an end to efforts to predicting economic fluctuations. The Depression only highlighted the demand for improved forecasting methods, just as prior periods of panic had, and led inevitably to an interest in *new* models—including the work of the Cowles Commission in econometric forecasting and, of course, Keynesian models.

Conclusion

The experiences of the pioneer forecasters are helpful in making sense of the forecasting industry generally. The period of the 1920s and 1930s demonstrates the ways in which forecasting methods can become imprisoning if made public. Once forecasters published their methods, they had difficulty changing them. The story of the Harvard Economic Service makes for a good example. For much of the 1930s, the Harvard group

continued to insist their models worked, even when the curves fell out of sequence. They ceased publication in 1931 in the face of criticism by the school's alumni.

The post-1929 period shows the danger of gurus. Roger Babson, for instance, gained acclaim after his 1929 forecast—leading eventually to his failed presidential run. Few people went back and examined Babson's track record, a complicated task, to see how he had fared in past predictions. Babson's Newtonian explanation for business cycles owed its popularity more to marketing than economic insight. Unlike the Harvard group, he was not burdened by his many failed predictions over the years. He continued printing Babsoncharts until his death in the 1960s.

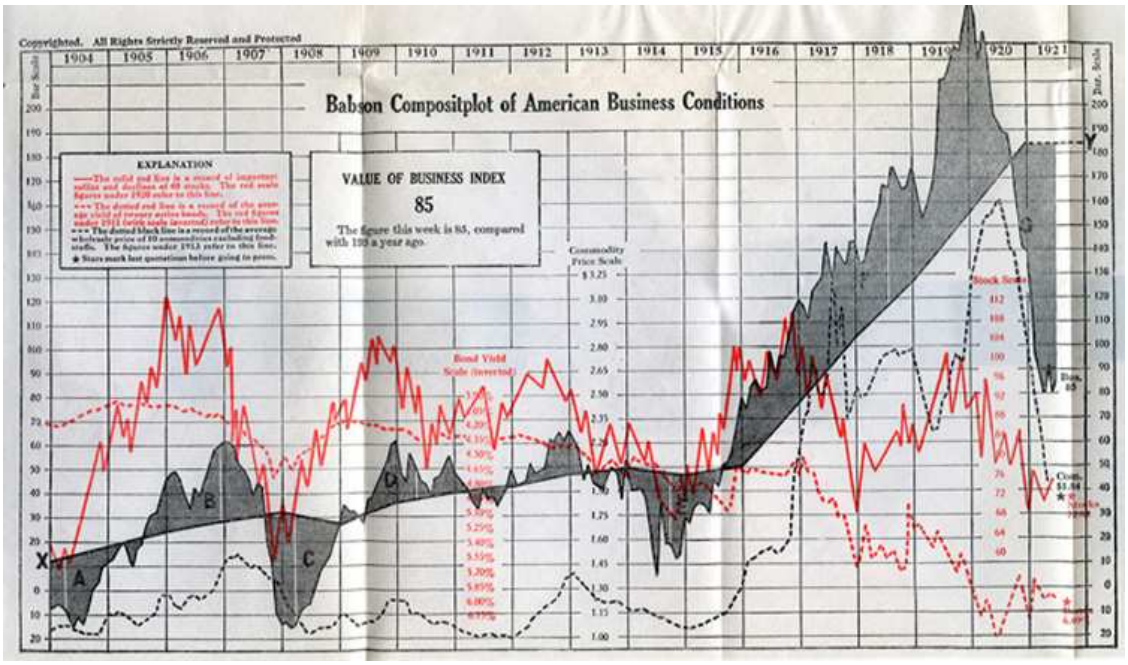
The period of the early forecasters also demonstrates the impossibility of forecasting unprecedented events. Business barometers were based on the idea of examining previous similar economic episodes. All forecasters used historical data when making forecasts; when more data became available after World War I, they were able to spot more trends—both illuminating and misleading trends. When confronted with a crisis that was not predicted on their charts, they looked back to the last crisis, in this case 1920-1921. When the economy failed to rebound by 1931, beyond the length of time of the 1920-21 recession, forecasters had no historical analogy to explain it.[51]

Finally, the history of the economic forecasting industry also reveals the different goals and incentives of the individuals who developed forecasts. In their edited collection *Understanding Economic Forecasts*, economists David Hendry and Neil R. Ericcson suggested that forecasts are like road maps. "The economic equivalent of a road map is an econometric model, which seeks to embody our best knowledge in the linkages in an economy," they wrote. They argued that the road map, like an economic forecast, was

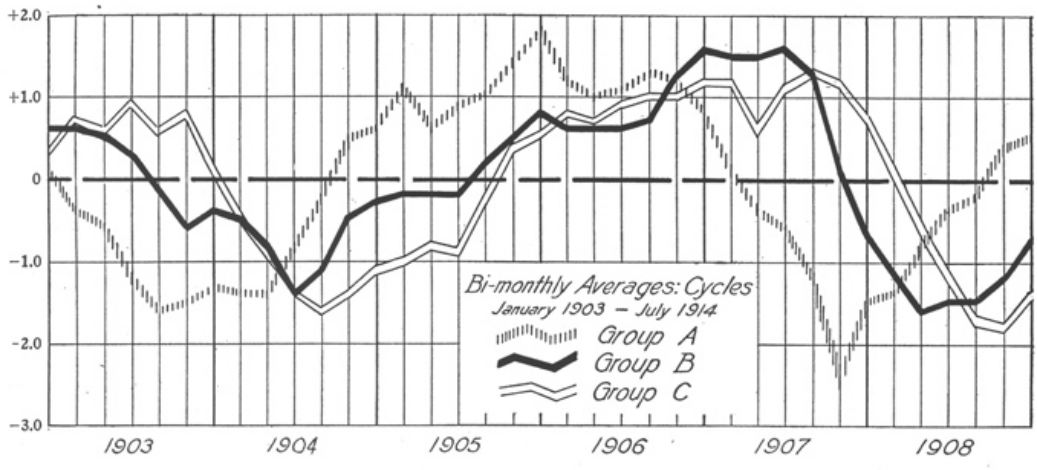
only an idealized account. It, for instance, did not tell you about the particular aspects of the day you travel, including, for instance, the weather conditions or the amount of traffic.

But forecasts, especially in the early period dominated by entrepreneurial firms, were more like treasure maps than road maps. This analogy fits better with the speculative nature of some of these pioneering forecasters, whose advertisements promised near-guaranteed returns. The analogy of a forecast to a treasure map raises questions about the incentives of the forecasters. If someone knew with certainty the exact location of a chest of diamonds, the best thing to do would be to guard it; the worst thing to do would be to sell maps showing its location. If Babson, for instance, knew the future course of the economy, or the future level of prices, with certainty, why distribute such knowledge? But if he was uncertain about the accuracy of his predictions then the best business to enter would be the "map-making" business—just as Babson did. Not all forecasters were primarily interested in making money with their forecasts, however. The Harvard group was more intent on proving the correctness of their model. They stopped marketing their newsletter after 1927 and left the business in 1931 after their model encountered massive failure. Finally, still others, including Irving Fisher, entered the field of forecasting as a way to begin public discussion on the need to stabilize the dollar. Hence he distributed his forecasts primarily through popular newspapers. Understanding the historical aspirations of the forecasters is essential to making sense of the methodology these forecasters used, the way they shaped their message, and the way they went about marketing their forecasts.

Illustrations



The Babsonchart. This image is from 1921. The large shaded areas marked A, B, C, D, E, F, and G, represent depressions and expansions above the "normal" line. Babson believed that areas of expansion (B, for instance), would be equal to areas of recession (C, for instance) that followed. The chart also contained a wealth of other information, including stock prices, bond prices, and wholesale commodity prices.



BIMONTHLY AVERAGES OF CYCLES OF GROUPS A, B, AND C

GROUP A. YIELD OF TEN RAILROAD BONDS;* PRICE OF INDUSTRIAL STOCKS; PRICE OF TWENTY RAILROAD STOCKS; NEW YORK CLEARINGS.
GROUP B. PIG-IRON PRODUCTION; OUTSIDE CLEARINGS; BRADSTREET'S PRICES; BUREAU OF LABOR PRICES; RESERVES OF NEW YORK BANKS.*
GROUP C. RATE ON FOUR-TO-SIX MONTHS PAPER; RATE ON SIXTY-TO-NINETY DAY PAPER; LOANS OF NEW YORK BANKS;* DEPOSITS OF NEW YORK BANKS.*

(Units are one-tenth of one per cent)

The Harvard Economic Service Chart from Warren M. Persons, "The Index: A Statement of Results," *The Review of Economic Statistics* 1:2 (Apr. 1919), p. 112. The Harvard group argued that trends in the aggregate group series representing speculation (A) would signal upcoming changes in business activity (B), which would, in turn, be followed by changes in banking (C).

[1] See, for instance, Francis X. Diebold, "The Past, Present, and Future of Macroeconomic Forecasting," NBER Working Paper 6290 (1997); David F. Hendry and Neil R. Ericsson, eds., *Understanding Economic Forecasts* (MIT, 2001); and Graham Elliott and Allan Timmermann, "Economic Forecasting," *Journal of Economic Literature* 46:1 (2008): 3-56.

[2] Two excellent exceptions to a lack of historical interest in the subject are Tobias F. Rötheli, "Business Forecasting and the Development of Business Cycle Theory," *History of Political Economy* 39:3 (2007): 481-510; and Giovanni Favero, "Weather Forecast or Rain Dance? On Inter-war Business Barometers," No. 2007, Working Papers, University of Venice, Department of Economics. Rötheli makes the point that practitioners pioneered forecasting techniques prior to theorists. Favero looks at Roger Babson, Warren Persons, and Irving Fisher and argues that the methods developed by forecasters affected the actions of businesspeople in the early 1930s; he also analyses important critiques, including those by Oscar Morgenstern. Another exception here is the work of Christina D. Romer, "The Great Crash and the Onset of the Great Depression," *The Quarterly Journal of Economics*, Vol. 105, No. 3. (Aug., 1990), pp. 597-624.

[3] Mary S. Morgan, *The History of Econometric Ideas: Historical Perspectives on Modern Economics* (Cambridge U. P, 1990), p. 7.

[4] See Beverly Gage, *The Day Wall Street Exploded* (Oxford, 2009)

[5] On forecasting in the late nineteenth and early twentieth centuries, see Charles O. Hardy and Garfield V. Cox, *Forecasting Business Conditions* (New York: Macmillan, 1927); Garfield V. Cox, *An Appraisal of American Business Forecasts* (Chicago: University of Chicago, 1930); Horace Rudolf Givens, *Roger Babson and His Major Contemporaries* (Ph.D. dissert., New York University, 1975);

Peter Eisenstadt, "The Origins and Development of Technical Market Analysis," *Essays in Economic and Business History* (1997): 335–251.

[6] See Steve Fraser, *Everyman a Speculator: A History of Wall Street in American Life* (New York: HarperCollins, 2005).

[7] Hardy and Cox, *Forecasting Business Conditions*, p. 41.

[8] On the historical desire for perceiving the future, see Keith Thomas, *Religion and the Decline of Magic* (Oxford; reprint 1997).

[9] McCraw, *American Business, 1920-2000: How it Worked* (Harlan Davidson, 2000), 29-30.

[10] Roger W. Babson, "Sources of Market News," *Annals of the American Academy of Political and Social Science* 35:3 (May, 1910): 617–626. For all of these offerings, businesses paid $100–$150 or so per month.

[11] Robert Skidelsky, *Keynes: The Economist as Savior, 1920-1937* (1992), p. 577.

[12] Knight, Risk, Uncertainty & Profit (1921). See Hartmut Berghoff, "Civilizing Capitalism: The Beginnings of Credit Rating in the U.S. and Germany," German Historical Institute Bulletin, 45 (Fall, 2009). See also Tobias F. Rötheli, "Business Forecasting and the Development of Business Cycle Theory," *History of Political Economy* 39:3 (2007): 481-510.

[13] On this, see Moss, *When All Else Fails* (Harvard), pp. 40-41.

[14] Alexander D. Noyes, "A Year After the Panic of 1907," *The Quarterly Journal of Economics* 23:2 (Feb. 1909): 186. Fiction writers compared economic panics to windstorms and hurricanes. David A. Zimmerman, *Panic!: Markets, Crises, and Crowds in American Fiction* (Chapel Hill, N.C.: The University of North Carolina Press, 2006).

[15] Babson, *Actions and Reactions*, p. 108. Emphasis is in the original.

[16] *Wall Street Journal*, Jun. 15, 1907, p. 3.

[17] Alchon, *The Invisible Hand*, p. 5.

[18] See Paul Miranti and Nandini Chandar, "Integrating Accounting and Statistics: Forecasting, Budgeting and Production Planning at the Bell System during the 1920s," *Accounting and Business Research*, 39, No. 4 (2009): 1-23. On the role of practitioners in pioneering forecasting methods, see Tobias F. Rötheli, "Business Forecasting and the Development of Business Cycle Theory," *History of Political Economy* 39:3 (2007): 481-510

[19] "Economic Research at Harvard Recently Aided by $150,000 Grant from the Rockefeller Foundation, *The Harvard Crimson*, Jan. 28, 1930.

[20] The Variability in the Distribution of Wealth and Income (Ph.D., The University of Wisconsin—Madison, 1916).

[21] This quote is from a speech at the University of Toronto, Jan. 28, 1925, and is cited in Hardy and Cox, p. 109.

[22] For each series, Babson created an annual scale from high to low and devised from it what "normal" monthly growth should be. See Charles O. Hardy and Garfield V. Cox, *Forecasting Business Conditions* (New York: Macmillan Co., 1927), 28.

[23] Tooze, *Statistics and the German State*, p. 106.

[24] William Wallace, *Business Forecasting and Its Practical Application* (London: Sir Isaac Pitman & Sons, 1927), p. 27.

[25] Warren M. Persons, "Construction of a Business Barometer Based upon Annual Data," *The American Economic Review* 6:4 (Dec. 1916): p. 743. Babson's methodology and reasoning were criticized in Melvin T. Copeland, "Statistics of Business Conditions," *The Quarterly Journal of Economics* 29:3 (May, 1915): 522-562.

[26] John Kenneth Galbraith, *The Great Crash, 1929* (1954; Boston: Houghton Mifflin, 1988), pp. 84-5.

[27] vi:4 (December 1916).

[28] Mary S. Morgan, *The History of Econometric Ideas: Historical Perspectives on Modern Economics* (Cambridge U. P, 1990), p. 7.

[29] Warren M. Persons, "A Non-Technical Explanation of the Index of General Business Conditions," *Review of Economic Statistics* 2:2 (Feb. 1920): 39-48. Quote, p. 39.

[30] London and Cambridge Economic Service, In Cooperation with the Harvard University Committee on Economic Research, Introductory Number, January, 1923, p. 4.

[31] Charles O. Hardy and Garfield V. Cox, *Forecasting Business Conditions* (New York: Macmillan, 1927), p. 79-80.

[32] Charles O. Hardy and Garfield V. Cox, *Forecasting Business Conditions* (New York: Macmillan, 1927), p. 79.

[33] Kathryn M. Dominguez, Ray C. Fair, Matthew D. Shapiro, "Forecasting the Depression: Harvard versus Yale," *The American Economic Review* 78:4 (Sept. 1988): 596.

[34] Warren M. Persons, "A Non-Technical Explanation of the Index of General Business Conditions," *Review of Economic Statistics* 2:2 (Feb. 1920): 39-48. Quote, p. 47.

[35] 1924. "Assails 'Business Cycle'; Prof. Fisher of Yale Tells Statisticians it is a Myth," *NYT*, Nov. 8, 1924, p. 24.

[36] See Irving Fisher, "'The Equation of Exchange,' 1896-1910," *The American Economic Review* 1:2 (Jun 1911): 296-305.

[37] Fisher, *Purchasing Power of Money*, p. 14. See also Tooze, p. 116.

[38] Robert Loring Allen, *Irving Fisher: A Biography* (Cambridge, Mass.: Blackwell Publishers, 1993), p. 116. K. M. Domingues, R. C. Fair, and M. D. Shapiro, "Forecasting the Depression: Harvard vesus Yale," *American Economic Review* 78 (September, 1988): 598-599. Robert Loring Allen, *Irving Fisher: A Biography* (Cambridge, Mass.: Blackwell Publishers, 1993, p . 116.

39 Alfred Cowles, 3rd, "Can Stock Market Forecasters Forecast?" *Econometrica*, July 1933, pp. 309–324.

[40] Quoted in Dorfman, v. 4, p. 368, original from Mitchell from "Accountants and Economics with Reference to the Business Cycle," The Journal of Accountancy, March 1923, pp. 167, 169.

41 *New York Times*, September 6, 1929, p. 12.

42 August 31, 1921, p. 208.

43 *New York Times*, September 6, 1929, p. 12.

44 January 8, 1931, pp. 463–464. See letter from William P. Everts.

45 Kathryn M. Dominguez, Ray C. Fair, and Matthew D. Shapiro, "Forecasting the Depression: Harvard versus Yale," *The American Economic Review* 78:4 (Sept., 1988): p. 599.

46 Irving Fisher, *The Stock Market Crash – And After* (New York: The MacMillan Company, 1930), p. 263.

47 Kathryn M. Dominguez, Ray C. Fair, Matthew D. Shapiro, "Forecasting the Depression: Harvard versus Yale," *The American Economic Review* 78:4 (Sept. 1988): 596, fn2.

48 Garfield V. Cox, "Another Year of Business Forecasts," *The Journal of Business of the University of Chicago* 3:2 (Apr, 1930): 151-170.

49 Romer, "Uncertainty," p. 617.

50 On the role that forecasts played on businessmen's decisions, see Giovanni Favero, "Weather Forecast or Rain Dance? On Inter-war Business Barometers," No. 2007, Working Papers, University of Venice, Department of Economics.

51 The problem of unprecedented, and even rare, events is discussed in Nassim Nicholas Taleb's *The Black Swan: The Impact of the Highly Improbable (New York: Random House, 2007).*