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Volume Title: Forecasting and Recognizing Business Cycle Turning Points

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Volume Publisher: UMI

Volume ISBN: 0-870-14479-0

Volume URL: <http://www.nber.org/books/fels68-1>

Publication Date: 1968

Chapter Title: PART 1 The 1920

Chapter Author: Rendigs Fels, C. Elton Hinshaw

Chapter URL: <http://www.nber.org/chapters/c1086>

Chapter pages in book: (p. 8 - 13)

## *The 1920's*

Garfield V. Cox investigated six forecasting services during the 1920's.<sup>6</sup> Geoffrey H. Moore has devised methods of utilizing Cox's results to show the pattern of recognition of cyclical turning points and has applied the methods to 1919-27. The results of adding the 1929 peak to Moore's findings appear in Charts I-2 and I-3 below.

For each month of the period covered, Cox excerpted a brief quotation from each of six forecasting services, summarizing the service's view of the outlook. Cox then scored the quotations in two different ways, for warning of turning points and for general correctness. For purposes of the former, he determined dates of "major" upturns and downturns in the Annalist Index of Business Activity. These dates, fortunately, are in one-to-one correspondence with the NBER reference peaks and troughs for the decade in question.<sup>7</sup> Beginning with the earliest month in which any of the six forecasting services correctly predicted the turn, Cox rated each service for the month according to whether the direction of its prediction was right, wrong, or neutral (i.e., no forecast of a change in direction).<sup>8</sup> For example, on August 5, 1919,

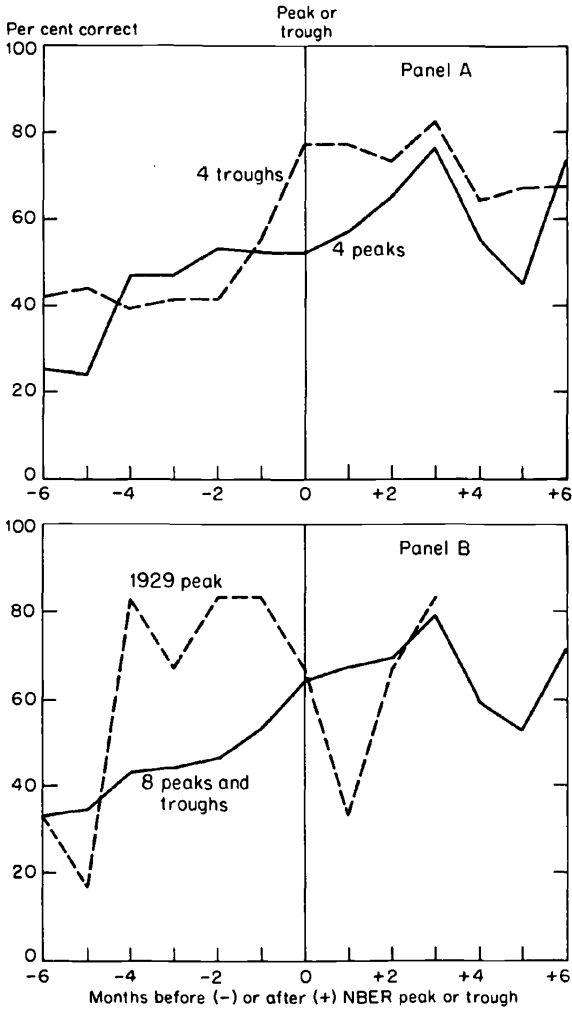
<sup>6</sup> *An Appraisal of American Business Forecasts*. The second edition differs from the first, which was published in 1929, by incorporating part of the preliminary results of the author's study of 1928-29, published as "Another Year of Business Forecasts," *Journal of Business*, April 1930, pp. 151-170.

<sup>7</sup> *Ibid.*, p. 31. In three of the eight cases, the dates of Cox and the NBER are identical, in two cases the discrepancy is one month, in one case two months. (See Table I-1.) Cox's March 1921 upturn is four months earlier than the NBER's trough of July 1921. (The latter is a revision of the September 1921 date originally given.) Cox's March 1927 downturn is six months later than the NBER's October 1926 peak. (By "upturn" and "downturn," Cox meant approximately the same as what the NBER means by "trough" and "peak.") Even the large discrepancies seldom make a difference for present purposes (but cf. note 15 below).

<sup>8</sup> *Ibid.*, pp. 32-34. In some cases, notably 1926, the decision to begin the scoring with the first month in which any of the six services correctly anticipated the change of direction results in a bias (see Chart I-2). The scoring begins with September 1926, one month before the NBER peak. This fact implies that in the

CHART I-2

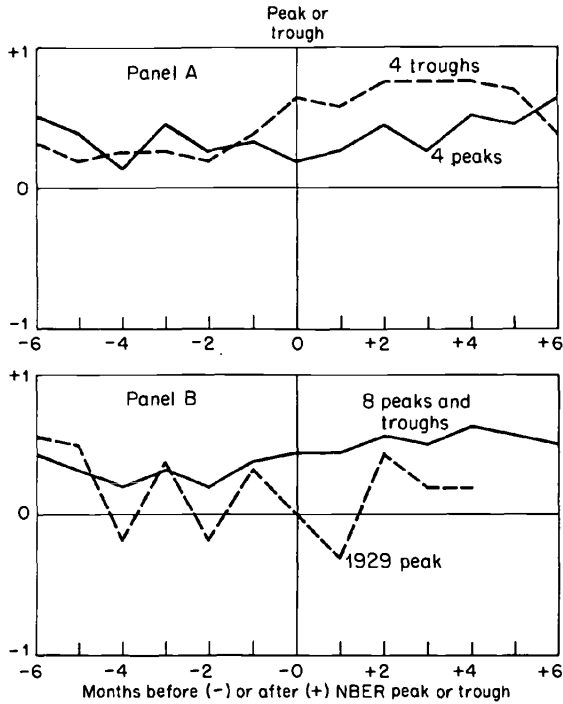
Recognition of Peaks and Troughs, Six Forecasting Services, 1919-29:  
Direction of Change



SOURCE: Garfield V. Cox, *An Appraisal of American Business Forecasts*, revised ed., Chicago, 1930, pp. 85-90.

## CHART I-3

Correctness of Forecasts Made in the Vicinity of Peaks and Troughs, Six Forecasting Services, 1919-29



SOURCE: Cox, *American Business Forecasts*, Table I.

one forecaster said, "My opinion, briefly, is that there will be a distinct shortage of labor this fall . . . and this shortage may continue into next year; but that before long we are going to experience a real period

earlier months none of the forecasts was correct. In computing the averages for months designated -6, -5, -4, -3, and -2 on the chart, 1926 has been omitted from the denominator as well as the numerator. An alternative procedure would be to consider all forecasters as having made incorrect forecasts for the five months prior to September 1926. The average per cent of correct forecasts six months before the four peaks would be reduced from 25 per cent to 13 per cent, if all forecasts not available for this reason (including five at the January 1920 peak) were included in the denominator; five months before, from 17 per cent to 13 per cent, etc.

With respect to anticipation of major turning points, Cox gave the forecasts numerical scores for accuracy in predicting (1) amplitude of the expected movement in the changed direction and (2) the time of the turning point. These

of unemployment.”<sup>9</sup> Cox rated this forecast correct, since it anticipated the downturn which he dated in March 1920 (the NBER peak is January). Another forecaster said on March 26, 1923, “probabilities are becoming apparent that the Prosperity Period may be over around the beginning of 1924.”<sup>10</sup> Cox considered this forecast wrong. His date for the downturn was May 1923 (the same as the NBER peak). The forecast for the last half of 1923 was for the wrong direction.

Cox's only explanation of the criteria he used in deciding whether a given forecast was right, neutral, or wrong consisted of the following: “A service which, within a given period prior to a major turn, was either silent or predicted a continuation of the existing rate of activity is assumed to have done its clients neither good nor harm. It is treated as having misled its clients only when it predicted a change in the wrong direction.”<sup>11</sup> With so little to go on, one cannot be sure of the exact meaning of the data in Chart I-2. Our experience with scoring later forecasts by different methods suggests that Cox's scores, like ours, have a considerable element of subjectivity.

Panel B of Chart I-2 shows that, taking all eight peaks and troughs together, the percentage of correct predictions of the changed direction rises from 33 per cent six months before the cyclical reversal to 79 per cent three months after. Although it then falls off to 59 per cent and 53 per cent in the fourth and fifth months after the turning point, it rebounds to 71 per cent six months after the turn. The per cent of

scores were added and given a plus sign if the direction of change was correctly predicted, a minus sign if incorrectly predicted. Thus he derived a number representing the “adequacy” of each forecast. No use has been made here of his scores for amplitude and timing. Since the method underlying Chart I-2 utilizes only the correctness (or otherwise) of the forecasts of direction of change, omitting amplitude, the results may be biased in an upward direction. That is, a service that predicted the direction of change correctly gets full credit even if it thought the ensuing movement would be too minor to count, under NBER rules, as a cyclical expansion or contraction. Cox's scores cannot suitably be used here because, as he says, “In scoring a succession of forecasts, . . . the later the date of prediction of a turn the more definite it must be concerning time and amplitude in order to receive a given rating.” (*Ibid.*, p. 34.) His numerical scores, therefore, do not exhibit the pattern of increasing recognition, since his method tends to eliminate the very increase we are interested in studying.

<sup>9</sup> Charles O. Hardy and Garfield V. Cox, *Forecasting Business Conditions*, New York, 1927, p. 348.

<sup>10</sup> *Ibid.*, p. 370.

<sup>11</sup> *American Business Forecasts*, 1st ed., pp. 30–31. This implies a neutral (zero) score if the forecaster predicted leveling off instead of a peak or trough. Presumably the “given period” begins with the first month in which any of the services correctly anticipated the coming turn.

wrong forecasts (not shown on the chart) fluctuates erratically between 5 and 14 per cent from six months before until two months after the turn. It then drops off to zero for two months.

In a broad way, the pattern shown in Chart I-2 is typical of what we shall find for more recent times. During the six months before a peak or trough, the percentage of services anticipating a change of direction is rather low. But it rises steadily, reaching its height a few months after the turn. In some respects, however, the results of the Cox-Moore analysis are surprising. The unexpectedly high percentage of correct anticipations before the turn may be attributed in part to the bias discussed in note 8. On the other hand, the maximum—79 per cent for all eight peaks and troughs, reached three months later—is considerably short of unanimity. Rather puzzling is the drop after plus three months instead of the rise that might have been expected. With some exceptions scores tend to be higher in the vicinity of troughs than at peaks (Panel A). Results similar in kind but more marked in degree will be presented below for 1948–61.

Cox's scores for correctness, on a scale from plus one to minus one, were designed for forecasts made at any time, not just in the vicinity of turning points.<sup>12</sup> A forecast made on February 13, 1919, that "this is bound to be a dull year in trade and transportation," for instance, was given the minimum score of minus one.<sup>13</sup> The year in fact was one of inflationary boom. A forecast made on October 11, 1923, that "the first half or three-quarters of 1924 is to be a time of trade reaction or mild depression, but not of anything worse," received the maximum score of plus one.<sup>14</sup> Zero was given for the statement made on November 18, 1926, that "the first half or two thirds of next year is likely to be a time of mild trade reaction" because Cox considered the prediction right with respect to what would happen but wrong as to timing.<sup>15</sup> In all his scoring, Cox's criterion was "whether the shaping of policy in

<sup>12</sup> Cox also scored the forecasts for definiteness on a scale of plus one to zero and multiplied the scores for definiteness and correctness to get a score for adequacy. These scores are not used here because, like the scores for timing, "a higher standard of definiteness was required concerning the *character*, of the predicted event if the service had indicated that it should be expected almost at once than if it had been thought to lie six months in the future." (*Ibid.*, p. 19.)

<sup>13</sup> *Ibid.*, pp. 17–18.

<sup>14</sup> *Ibid.*, p. 17.

<sup>15</sup> *Ibid.*, p. 18. Note that his peak date was March 1927. On the basis of the NBER peak of October 1926, this statement could be regarded as substantially correct.

conformity with the forecast in question would, on the whole, have been a step in the right direction or in the wrong one.”<sup>16</sup> Predictions were assumed to apply to no more than eight months into the future unless the forecaster indicated otherwise. A forecast of conditions in a special sector was judged only by events in that sector. Forecasts of general business were checked either against the composite index of business activity specified by the service or, failing that, against three composite indexes (those of the *Annalist*, A.T.&T., and the Federal Reserve Bank of New York).

The relation of Cox's scores to recognition of cyclical turning points is not clear. The scores during the six months before and after a cyclical peak or trough may or may not pertain to forecasts of the turning points in question. Nevertheless, Chart I-3 is presented to supplement Chart I-2. It displays some tendency toward increasing correctness of forecasts as turns are approached and passed, but the tendency is less marked for the averages than in Chart I-2. For 1929, the scores fluctuate from month to month in a highly erratic fashion.

## 4

### *1948-61: Accuracy of Dating*

For each of the eight turning points between 1948 and 1961, we have studied reports published by a number of contemporary observers. Like Cox, we first excerpted short quotations from current forecasts. We scored the excerpts in two different ways, for accuracy of dating and for degree of recognition. The scores for dating range from 0 to 100. The maximum score was given for designating a peak or trough within one month of the NBER date. A forecast that missed by two months received a score of 75; by three months, 50; by four months, 25. Thus, positive scores were given for forecasts of a peak or trough anywhere within a nine-month interval centered on the NBER reference date. A

<sup>16</sup> *Ibid.*, p. 19.