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the 1947–60 period,[6] the question arises as to whether such action is in response to an expected (or recognized) turning point or for some other purpose (i.e., "disorderly markets," balance of payments problems, etc.). The Committee's minutes are the best source of this information. A reading of these minutes shows that a modification of the previous findings is in order. The minutes yield additional information about the Committee's ability to recognize cyclical turns and, in combination with its actions, yield additional insight into decisions concerning monetary policy.

Chapter 2 describes the method used to evaluate the Committee's forecasts. Chapter 3 reviews chronologically the FOMC's view of economic conditions in the vicinity of the seven postwar turns covered by its minutes and compares its ability to recognize peaks and troughs with that of the business analysts studied by Fels. Chapter 4 relates the Committee's forecasts and views of current economic conditions to the policy decisions which it made during the periods surrounding cyclical turns. And the impatient reader can turn to Chapter 5 for the conclusions.

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Procedure

In his study of the problem of forecasting and recognizing business cycle peaks and troughs, Fels found "there is a pattern in reports on the business outlook in the vicinity of cyclical peaks and troughs. As time goes by, analysts become increasingly aware of first the possibility, then the probability, and finally the certainty of a turning point." [7]

[6] Brunner and Meltzer recorded eighty-seven changes in policy during the years 1947–60. See their *An Alternative Approach to the Monetary Mechanism*, Subcommittee on Domestic Finance, House of Representatives, 88th Congress, 2d Sess., Washington, 1964, pp. 119–124.

[7] Rendigs Fels, "The Recognition Patterns of Business Analysts," the companion piece in this volume. Fels studied the forecasts of ten publications made in the vicinity of the eight turning points since World War II. Only eight of the publi-

That is, recognition of a cyclical turn does not suddenly occur after a discrete lag. Rather, there is a pattern of recognition beginning with the first vague indications of awareness of the possibility of a turn. As new information becomes available, more or less confidence is shown that a peak or trough is approaching (or has passed) and eventually, if the turn occurs, the forecaster becomes certain.

How does the FOMC's views of economic conditions in the vicinity of cyclical turns compare with those of other forecasters? Does policy responsibility influence the Committee's outlook? To answer these questions systematically, statements indicative of the members' views have been excerpted from the Committee's minutes for the period 1947–60. Beginning three months before the NBER reference cycle date and ending six months afterwards, these quotations were scored using the system developed by Fels.[8]

1. The Scoring System

The scores can range from zero to 100 per cent in 5 per cent increments, and are assigned on the following basis. The Committee members always have some opinion about the likelihood of a peak or trough that can be expressed in the form of a percentage, though the percentages are usually implicit. Each score assigned represents the scorers' estimate of the likelihood implicit in the Committee's discussions of a cyclical turn within a three-month target interval centered on the NBER business cycle date. The three-month target interval is used as a time dimension restriction on the forecast. The longer the time period to which a forecast refers, the more confident a forecaster would be that a peak or trough would occur. If the time period were sufficiently long, one would expect a cyclical turn with 100 per cent confidence. Each assigned score represents the scorers' answer to the question: "What is the probability of a

cations were available for the entire period. The use of his findings in this study is restricted to those eight (four business publications, two security services, and two bank letters), and to seven of the eight turns. The February 1961 turn is omitted here because at the time the study was completed the FOMC *Minutes* had been published only through 1960.

[8] Although Fels used two kinds of scores, one for timing and one for degree of certainty, only the scoring procedure for certainty is used in this study. The Committee's comments on timing of cyclical turns were so few that an adequate comparison between the scores at various turns and between the Committee and the business forecasters could not be made.

cyclical turn within plus or minus one month of the NBER business cycle date implicit in this forecast?" A score of zero is assigned to a forecast implying virtual certainty (less than 2.5 per cent chance) that no turn will (did) occur within the target interval.

Following the procedure used by Fels, the "normal chance" of a peak within any three-month period is assumed to be 10 per cent; of a trough, 15 per cent. These percentages are rough approximations based on the historical averages of peacetime expansions (two to three years) and contractions (about one and one-half years). Since forecasters are virtually always aware of some possibility of a turn, the "normal chance" score is assigned (10 per cent in the vicinity of peaks, 15 per cent in the vicinity of troughs) unless the Committee's discussion implies that the chances are greater or less than "normal." If the Committee's discussion of economic conditions indicates a greater than "normal chance" of a cyclical turn within the three-month interval centered on the NBER business cycle date, a higher score is assigned—up to the maximum of 100 per cent. A score of 100 per cent implies virtual certainty (likelihood greater than 97.5 per cent) that a turn did (will) occur within the target interval. Since the scores are subjective evaluations of the Committee's discussions, they are limited to multiples of five (i.e., there are twenty-one possible scores). No finer gradation is justified.

To indicate better the nature of the scoring procedure, a few quotations from the minutes and the score which would be assigned to each are in order.

The following statements would be given the "normal chance" score for peaks and troughs, respectively:

> Almost all recent data continue to reflect rapid economic growth. Even with a steel strike of relatively long duration, the present momentum of economic recovery will almost certainly continue to carry the economy higher . . .[9] (Score—10 per cent.)
>
> Recent statistical data confirm the continued business decline, and there is no sign yet of any combination of favorable factors sufficiently strong to reverse this trend.[10] (Score—15 per cent.)

A score of 50 per cent, which implies that the forecaster believes that a turn within the target interval is as likely as not, would be assigned to the following statements:

[9] *Minutes,* July 28, 1959, p. 509.
[10] *Ibid.,* March 4, 1958, p. 176.

Whether this is a period of formation of forces for further uptrend or for some downward readjustment can not yet be clearly read from current business indicators.[11]

I believe that a generally sidewise movement of the economy is more likely during the next few months than a pronounced and cumulative movement either up or down.[12]

The economy is in a more or less neutral and uncertain area between expansion and recession.[13]

A score of 100 per cent implies that the forecaster was certain that a peak or trough had occurred. The following comments by members of the FOMC would receive that score:

Data becoming available made it clear that a vigorous economic recovery was now visible and tangible.[14] (Score with respect to preceding trough—100 per cent.)

In recent reports to the Committee, I have used the words "downsettling" to characterize the drift in over-all activity. In the light of recent information, general economic recession now appears to be the most appropriate description.[15] (Score with respect to preceding peak—100 per cent.)

The unfolding data are abundantly clear. They show vigorous revival—one of the more robust on record following one of history's shorter and milder contraction periods.[16] (Score with respect to preceding trough—100 per cent.)

Although as many as twenty different views may be expressed at any one meeting, only one score is assigned. The Committee is considered to be a single forecaster. To determine how well a single score for the entire Committee reflected the opinions of the members, the author scored each individual's forecast separately in the vicinity of the 1960 peak. The individual scores for each meeting were then averaged; this mean score represents the degree of certainty for the Committee as a whole for that meeting. After a lapse of time sufficient to forget the previously determined scores the author assigned one score per meeting to the entire Committee as a single forecaster. For each meeting, the average score for all forecasts and the single score for the Committee as a whole were compared.

The two patterns of certainty scores were quite similar until five and

[11] *Ibid.*, August 25, 1953, p. 318.
[12] *Ibid.*, September 22, 1954, pp. 277–78.
[13] *Ibid.*, September 13, 1960, pp. 706–708.
[14] *Ibid.*, December 28, 1954, p. 395.
[15] *Ibid.*, December 12, 1957, p. 770.
[16] *Ibid.*, August 19, 1958, p. 692.

six months after the turn (see Appendix II, Table C), at which time the score for the Committee as a whole became substantially larger than the mean score of the individual forecasts. This divergence in the patterns may be attributed to the author's intuitive weighting of the forecasts of those members who analyzed the outlook in detail and stated precisely what they viewed the situation to be. In making policy decisions, those whose views are not yet crystalized may be strongly influenced by members who are positive. A single score for the whole Committee permits intuitive weighting of the views expressed and gives a clear, though subjective, picture of the Committee's outlook. In addition, it is not clear that an unweighted average of individual scores would be appropriate. Since everyone (seven Governors, twelve Presidents, and several staff members) attending the meeting may express an opinion but only the twelve members can vote, should all forecasts be treated equally? If not, how should the relative weights be assigned? Any weighted average score would involve as much subjectivity as a single score for the Committee as a whole.[17] Consequently, for the remaining months only one score for each meeting was assigned.

When there were two or more meetings in a month, the scores for each meeting were consolidated into a single score for the month. When there was no meeting in a given month, the score was derived by interpolation. This procedure facilitated comparisons of the FOMC's recognition patterns for different turns and comparisons of its patterns with those of the eight business analysts studied by Fels.

As a check on the author's interpretation of the Committee's forecasts, John Pilgrim, a graduate student, independently scored the excerpted quotes using the same procedure. We then compared scores. If a simple average of the two scores did not seem representative of either person's interpretation of the minutes, we discussed the forecasts and reached a consensus score, which is the score used in this study.[18]

[17] Pragmatically, the time required to score each person's comments individually for all seven turns would have been prohibitive, but it was done for the 1960 peak to gauge how much difference the procedure used makes in the recognition pattern.

[18] The original sets of independent scores are available upon request. In general, the patterns revealed by the independent scores were similar, and no important conclusion would be altered by the use of either of the original sets of scores rather than the consensus score. More than a third of the independent scores were identical, and nearly all the rest differed by 5 points or less. Pilgrim's scores were higher than the author's more often than not.

Although the scoring method glosses over differences in opinion among the individual members of the Committee and changes in the Committee's view in meetings within the same month, we believe the resulting certainty scores are sufficiently indicative of the Committee's views on past, current, and future economic conditions to justify the conclusions based on them.

From this pattern of certainty scores two values have been selected as being of particular use in assessing the Committee's ability to discern cyclical turns—the 50 per cent score and the 90 per cent score. The period between a turn and the first score of more than 50 per cent for the Committee's forecasts is defined as the recognition lag. Notice that this definition of "recognition" is independent of any policy decision which the Committee may have made and, therefore, is not comparable to "recognition" as defined in either of the previous studies. A score of 50 implies that the FOMC believes that a turn within the target interval (the NBER business cycle date plus or minus one month) is as likely as not. It does not imply or depend upon any "policy action," but is based on the Committee's new view of economic conditions.

The period between a turn and a score of 90 per cent, which implies a great degree of certainty that a turn has occurred, is defined as the confirmation lag.[19]

2. *Standard of Comparison*

An appropriate way to evaluate the ability of the FOMC to recognize and confirm cyclical turns is to compare its performance with that of other forecasters. The forecasting performances of the eight business analysts studied by Fels serve as a basis for this evaluation.

Beginning three months before the NBER business cycle date of a

[19] Appendix II, Table C, which compares unweighted average scores of individual's comments with the single scores for the Committee, raises a question concerning this criterion. Since at five and six months after the peak the single scores for the FOMC are substantially higher than the unweighted average scores, is the 90 per cent criterion large enough to warrant the conclusion that the Committee "confirmed" the occurrence of a turn? A 95 per cent criterion would affect the "confirmation" lag at only one turn—the 1960 peak. But a 100 per cent standard would extend the confirmation lag at all peaks, except 1957, beyond the six-month period; the lag at the troughs of 1954 and 1958 would be increased by one month each, and the lag at the 1949 trough would be increased by two months (see Appendix II, Table A). Given the subjective nature of the scoring procedure, the author felt that a certainty score of 90 per cent indicated a sufficiently high degree of confidence to justify its use as the criterion for "confirmation."

turn and ending six months after the turn, the Committee's certainty scores are compared with those of the eight business publications. These ten scores reflect the varying estimates of the forecasters' ability to recognize the occurrence of the turn as it is approached and passed. Two comparisons are made: the first compares the Committee's certainty scores with the average scores of the eight business forecasters; the second compares the Committee's recognition pattern with that of the "best" forecaster of the eight. The "best" forecaster is the publication with the highest mean certainty score for all postwar turns and is the same publication selected by Fels as his "best" forecaster. Its performance in recognizing troughs primarily accounts for its high over-all certainty score. The publication had the highest mean certainty score at each of the four troughs, but its performance was only the fourth best of the eight forecasters in recognizing peaks. Moreover, its position at peaks would be lower but for its exceptional performance at one peak, 1953. Hence in terms of consistency of performance the "best" forecaster is by no means the best, and indeed it strongly suggests an optimistic bias.

To check the consistency of the forecasters' performances, each of the eight publications in Fels' sample was ranked according to its performance at each of the eight turns. For all eight turns, for troughs only and for peaks only, the coefficient of concordance (which measures the degree of consistency among the rankings) is significantly different from zero at the five per cent confidence level.[20] Hence there is some evidence of consistency in the forecasters' performance, but the results for peaks and troughs separately may imply merely that some forecasters have an optimistic and others a pessimistic bias, while the results for peaks and troughs together may be attributed as much to forecasts that are consistently poor as to forecasts that are consistently good. Since the forecaster with the best over-all average record also has a highly variable and apparently biased performance, comparisons of the Committee's record with that of the "best" forecaster must be heavily qualified.

3. *False Alarms*

In order to check for false alarms—the "recognition" of turns which did not occur—and to obtain an estimate of the significance of scores

[20] See Appendix I, Table J for more detail.

prior to the actual turns, the Committee's views for all other months within the January 1947–December 1960 period were scored (see Appendix II, Table B). To do so, the target interval was redefined as a twelve-month period centered on the date of the Committee meeting. That is, the score assigned was the scorer's estimate of the likelihood of a cyclical turn implicit in the statements of the Committee members sometime within the past or future six-month period.

During the period studied, the FOMC twice almost "recognized" a peak which did not occur. Through the second half of 1951 and the first half of 1952, the Committee characterized the economic situation as one of approximate balance at high levels of activity. This was, indeed, the case. From the first quarter of 1951 until the fall of 1952, the economy moved along on a gently rising plateau. With rising expenditures on defense offsetting the declines in demand in the private sector, GNP, in constant dollars, increased only $0.9 billion from 1951-III to 1952-II.[21] In June 1951, the Committee adopted a "policy of neutrality"—continued restraint but not contraction of bank credit—and maintained it through 1952. During the first half of 1952, doubts about the future direction of activity were most evident. The certainty score reached a high of 40 per cent in February and averaged about 30 per cent for the six-month period (see Appendix II, Table B).

Again in 1956 the Committee evidenced considerable concern about future business conditions. In fact, GNP in constant dollars changed little—falling from $446.4 in 1955-IV to $443.6 in 1956-I, and from $445.6 in 1956-II to $444.5 in 1956-III. The Committee fluctuated between optimism and pessimism as to the rate of economic activity during 1956, but at no time did it foresee the probability of deflationary forces gaining sufficient strength to carry the economy into a recession. At the beginning of the year, the Committee expressed concern about the continued vigor of the expansion. No downturn was envisioned but such phrases as "the bloom is off the boom," "some steam has gone out of the engine," and "ruts in the road" were sprinkled throughout their discussion of the outlook. By March the Committee's view of the situation had shifted toward the probability of the resumption of the expansion, but it reverted to a concern about deflationary tendencies at the May meeting, although it viewed the situation as one of activity

[21] Roman numerals are used to denote specific quarters of the year (e.g., 1952-II is second quarter of 1952).

on a "high plateau." After the settlement of the steel strike in July, the Committee's concern about deflationary tendencies lessened, but during the last quarter of the year it again became somewhat pessimistic. The general view of the meetings for the rest of the year was that the economy was on a high plateau, perhaps slightly rising, but that the pace of advance was slackening and that soft spots were beginning to appear. (See Appendix II, Table B for scores during 1956.)

4. The Beginning of Recognition

Since the certainty score at three months prior to a cyclical turn was arbitrarily selected by Fels as the usual beginning of a pattern of increasing recognition, some measure of its validity is needed. To determine the beginning month of the FOMC's recognition pattern, we assumed the following rules: (1) In the initial month the score assigned must be at least 15 for peaks and 20 for troughs. That is, the score must exceed the "normal chance" score. (2) There must be no decline in the score, except when the lower score is at least double the "normal chance" score (i.e., at peaks, the lower score must be at least 20; at troughs, the lower score must be at least 30).

Table II-1 shows the initial month of the recognition pattern and

TABLE II-1

The Beginning Date of Recognition by the FOMC

NBER Business Cycle Date	Initial Month of Recognition Pattern	Number of Months Before NBER Date of the Turn
Peaks		
November 1948	October 1948	1
July 1953	December 1952	7
July 1957	October 1956	9
May 1960	February 1960	3
Troughs		
October 1949	September 1949	1
August 1954	April 1954	4
April 1958	February 1958	2

SOURCE: Based on data in Appendix II, Table B. See text for method of identifying the beginning date.

the number of months before the NBER date of the turn by which the Committee was judged to have begun recognizing an approaching turn. In three cases the pattern began more than three months before the turn, but for only two (1953 and 1957) did it begin substantially before that time. In each of these cases, the year previous to the peak year had been a period in which the Committee exhibited considerable concern about the possibility of a turn (see the above discussion of "false alarms"). As a rule of thumb, three months prior to a turn seems to be a reasonable date for the beginning of recognition, and comparisons of the FOMC's recognition pattern with that of the business forecasters is made on this basis.

3

The FOMC's Recognition Pattern: A Chronological Review

To give the reader more insight into the forecasting ability of the Committee than is provided by the certainty scores alone, this section describes its recognition pattern for each of the seven postwar turns covered in this study and compares its performance in recognizing and confirming these with the performances of the forecasters in Fels' sample of eight.

When policy actions are referred to, the author adopted the language of the Committee in characterizing them. For example, the "policy of neutrality" is the Committee's terminology, not the author's. Consequently, the references to "easy," "tight," "neutral," etc., money policies do not necessarily represent the author's opinion as to what monetary policy was being pursued, but represent the Committee's intentions as indicated in its minutes. Such references are merely descriptive and, as noted above, the scoring of the FOMC's forecasts is independent of the actions taken.