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POLICY OBJECTIVES OF THE FEDERAL RESERVE SYSTEM*

GLENN T. POTTS AND DUDLEY G. LUCKETT

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I. INTRODUCTION

Over the past several years a number of empirical studies¹ appearing in the professional literature have attempted to quantify the Federal Reserve's reaction function. In general terms, the attempt has been to determine whether the System responds in a coherent way to the goals of full employment, price stability, economic growth, and balance of payments equilibrium; and, if so, what relative weights it assigns these goals. Three factors have been the motivating force behind these studies.

There is, first, sheer professional curiosity. The Employment Act of 1946 more or less defines the goals, but offers no guide to the ordering of priorities. Since System officials understandably weasel when queried directly on the point, it becomes a matter of some interest to scholars in the field to see whether they can determine, first, if the Fed is responsive to these goals; and, second, the Federal Reserve's ranking of policy objectives.

But the issues involved go far beyond mere curiosity. A second, and very compelling, reason for these studies centers on the question of the endogeneity of Federal Reserve behavior. Virtually all models of the U. S. economy take exogenous monetary policy as their point of departure. However, if the Federal Reserve has a temporally consistent reaction function with respect to the aforementioned goals, then its behavior becomes endogenous, and the validity of these models is to that extent suspect; the treatment of what is really an endogenous variable as "independent" results in a biased coefficient.

There is, finally, the political issue of the independence of the Federal Reserve System. The pros and cons of this debate are too familiar to warrant discussion, except for one point: To those who argue that it is intolerable for something as important as monetary

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policy to be made by nonelective officials, it is sometimes replied that the System accepts, more or less automatically, the macroeconomic priorities of the administration in power, and the only real point of contention is the technical means of achieving these goals. The question, of course, is, do they? Estimated reaction functions of the Fed can shed light on this question by demonstrating (or not) that presidential administrations are a meaningful way to classify the data.

Previous studies of the objectives of monetary policy have in general proceeded according to the following method. First, an equation of the following form is stated:

$$(1) \quad MP = f(U, P, G, B),$$

where MP is some indicator of monetary policy, and the symbols on the right-hand side of the equation are proxies for unemployment, prices, growth, and the balance of payments, respectively. The indicated regression is then run, with or without a lag structure. Finally, the comparative weights given the various objectives are inferred from the estimated coefficients in the regression results.

Without in any way faulting these studies, it is to be noted that the method used contains two inherent weaknesses, both of which have to do with the indicator MP . First, if the wrong indicator is chosen, the results are meaningless. To take the most obvious example, if a monetary-aggregate indicator is used, while the Fed is in fact using a money-market indicator, then nothing very sensible can be inferred from the results. And, of course, the contrary is also true. Nor can the problem be resolved satisfactorily by running separate regressions using both indicators. It is a common observation that the authorities have been gradually increasing the importance attached to monetary aggregates, while at the same time continuing to place a good deal of significance on interest rates. Thus, neither indicator can truly capture monetary policy.

The second weakness of previous studies is that, even if the "correct" indicator is chosen, there is apt to be a discrepancy between *intended* monetary policy (what the Fed *wants to do*) and *actual* monetary policy (as measured by the indicator). The most meaningful interval for the observations of equation (1) is a month, since this approximates the interval between Open Market Committee meetings. Yet it seems clear that the Federal Reserve does not possess the power to fix precisely either money-market or monetary-aggregate variables within such a short period of time. Thus, other, extraneous, factors will typically force a discrepancy between the Fed's actual

intentions and its intentions as measured by the indicator. The common assumption that the two are identical simply cannot be sustained.

Accordingly, it is the purpose of this paper to shed some light on the objective function of the Federal Reserve, while at the same time avoiding the weaknesses (referred to above) of previous studies.² In general terms, we shall do this by measuring intended monetary policy directly, thereby avoiding the indicator problem altogether. More specifically, we shall use the intentions of the FOMC as stated in the Fed's *Annual Report* to classify monetary policy into either tight (T) or easy (E) periods. We then use discriminant analysis to distinguish between these two groups, where the arguments in the discriminant function are the four macroeconomic goals of equation (1). Since the authorities' intentions are determined directly from their published deliberations, and since no indicator is required for discriminant analysis, the problems encountered by previous studies do not arise.

Our method does, however, raise problems of its own. The most obvious of these is that our classification of Federal Reserve intentions into tight and easy is to some extent judgmental. Beyond this, we have forced what is essentially a continuous variable (monetary policy) into a twofold classification (T, E), which means that borderline cases are more than usually subject to misclassification. Thus, what follows should not be regarded as definitive, but rather as another piece fitted into the puzzle of monetary policy.

One further introductory note: In order to shed light on the question of Federal Reserve "independence," separate analyses have been made of the data grouped according to presidential administrations, as well as for the period as a whole. The issue is whether the subperiods seem to provide more meaningful results, both intuitively and statistically.

II. METHOD

We define intended monetary policy as that policy which is supported by a majority of the members of the FOMC. The majority opinion was deduced from a reading of the Record of Policy Actions of the FOMC in the *Annual Report* of the Board of Governors, 1956–1975.³ Policy intent was classified as "easy" if the majority felt that their policy actions should act to stimulate the economy, and similarly for "tight."⁴ If in any given month the Committee did not act to change the direction of policy, then the classification for that

TABLE I
CLASSIFICATION OF INTENDED MONETARY POLICY

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1956	T	T	T	T	T	T	T	T	T	T	T	T
1957	T	T	T	T	T	T	T	T	T	T	E	E
1958	E	E	E	E	E	E	E	T	T	T	T	T
1959	T	T	T	T	T	T	T	T	T	T	T	T
1960	T	T	E	E	E	E	E	E	E	E	E	E
1961	E	E	E	E	E	E	E	E	E	E	E	E
1962	E	E	E	E	E	E	E	E	E	E	E	E
1963	E	E	E	E	E	E	T	T	T	T	T	T
1964	T	T	T	T	T	T	T	T	T	T	T	T
1965	T	T	T	T	T	T	T	T	T	T	T	T
1966	T	T	T	T	T	T	T	T	T	T	T	E
1967	E	E	E	E	E	E	E	E	E	E	E	T
1968	T	T	T	T	T	T	E	E	E	E	E	T
1969	T	T	T	T	T	T	T	T	T	T	T	T
1970	T	T	E	E	E	E	E	E	E	E	E	E
1971	E	E	E	T	T	T	T	T	E	E	E	E
1972	E	E	E	E	E	E	E	E	T	T	T	T
1973	T	T	T	T	T	T	T	T	E	E	E	E
1974	E	E	T	T	T	T	T	E	E	E	E	E
1975	E	E	E	E	E	E	E	E	E	E	E	E

month was the same as the preceding month. Although changes in the discount rate were never used as the sole basis for classification, they were used as supplementary information. Table I summarizes our findings.⁵

As a check on the classification shown in Table I, a comparison was made between our findings and the findings of previous studies.⁶ With a single exception, our scheme agreed rather closely with these studies. The exception is the period from January 1962 through June 1963. Both Anderson (1969) and Poole (1971) classify this period as tight, while Hendershott (1968) classifies it as easy. We tend to agree with Hendershott, while acknowledging that the FOMC used unusually ambiguous language during this period because of the then-current conflict between domestic and international objectives.

Using Table I, we calculated four discriminant functions⁷—one for the entire period 1956–1975, and one each for the periods corresponding to the Eisenhower, Kennedy-Johnson, and Nixon-Ford administrations. The general form of the discriminant function was

$$(2) D_t = a_0 + a_1 U_{t-1} + a_2 \Delta_{t-1} IWPI + a_3 \Delta_{t-1} IIP + a_4 LPB_{t-1},$$

where D_t is the value entered into the discriminant function for the t th month;⁸ a_i is the coefficient of the i th variable; U is the percentage of the civilian labor force that is unemployed, and is our measure of the full employment objective; $IWPI$ is the industrial commodities component of the wholesale price index and is our measure of prices;⁹ IIP is the index of industrial production, and is our measure of economic growth;¹⁰ and LBP is the liquidity balance of payments surplus, in millions of dollars.¹¹

III. RESULTS

A. Overall Results, 1956–1975

Column A of Table I gives the results of the discriminant analysis for the entire twenty-year period, 1956–1975. While the F -ratio indicates that the discriminating power of the function is highly significant, this analysis is in some way the least impressive of the four analyses run. For one thing, the price variable is not significant, and adds virtually nothing to the discriminating power of the function. This, we believe, is counterintuitive. Additionally, the ability of the function to correctly classify observations, as shown by Column A of Table III, is marginally weaker than the other three analyses.

The comparatively weak results for the overall analysis appear to be consistent with other studies of the objectives of monetary policy. Christian (1968), for example, presents evidence to support the view that the policy objectives of the Fed are temporally unstable. Since whether or not presidential administrations are meaningful subperiods for classifying FOMC intentions bears directly on the issue of Federal Reserve independence, as discussed in the Introduction, the authors performed the following experiment. We computed the percent of correct classifications that *would have* occurred in each subperiod if the coefficients for the overall discriminant analysis had been used. In each case the percent of correct classification went down. While not, of course, conclusive, this experiment suggests to us that there is something distinctive about each subperiod.

B. The Eisenhower Administration

The discriminant results for the second Eisenhower administration (January 1956 to January 1961) are given in column B of Table II. As indicated there, the F -ratio for the discriminant function is highly significant, suggesting that the difference between tight and easy money can be described by reference to macroeconomic vari-

TABLE II
RESULTS OF THE DISCRIMINANT ANALYSES

Variables	A. Overall (1956-1975)		B. Eisenhower (%) Discrim.		C. Kennedy-Johnson (%) Discrim.		D. Nixon-Ford (%) Discrim.	
	Coefficient	power ^a	Coefficient	power ^a	Coefficient	power ^a	Coefficient	power ^a
U_{t-1} (-) ^b	-0.162***	59.9	-0.100	24.6	-0.108**	28.6	-0.175***	57.9
$\Delta_{t-1} IWPI$ (+)	0.035	8.0	0.791***	38.8	0.547*	23.1	0.033	8.6
$\Delta_{t-1} IIP$ (+)	0.108***	29.1	0.164**	28.0	0.212**	30.6	0.066*	18.7
LPB (-)	(d)	3.0	(d)	8.7	(d)	17.65	(d)	14.8
Constant ^c	0.795	—	0.469	—	0.491	—	0.874	—
F-Ratio	15.993***	—	9.471***	—	5.953***	—	9.398***	—

a. The percentage discriminating power is a measure of the relative importance of each independent variable in the discriminant function. It is computed by forcing the sum of the standardized regression coefficients to be equal to one.

b. The algebraic sign in parentheses is the theoretically "correct" sign. It is necessary to specify this explicitly because D_t is entered into equation (2) carrying a positive sign for tight months and a negative sign for easy months (see note 8). Thus, e.g., a negative sign on the coefficient for U_{t-1} means that an increase in unemployment will result in a smaller (or more negative) discriminant score, which in turn indicates easy money. That is, higher than average levels of unemployment are associated with easy money, and lower than average levels with tight money. Similar reasoning, *mutatis mutandis*, accounts for the other theoretically "correct" signs.

c. The constant is a correction for the means of the raw data and is equal to the sum of the products of the estimated coefficients and the overall means of the independent variables.

d. Less than 0.0005 in absolute value.

*, **, and *** indicate significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

TABLE III
PERCENT CORRECT CLASSIFICATIONS OF DISCRIMINANT ANALYSES

	A. Overall (1956-1975)	B. Eisenhower	C. Kennedy- Johnson	D. Nixon- Ford
Tight	74.6	73.2	70.0	85.7
Easy	68.4	90.0	76.1	66.7
Overall	71.7	78.7	72.9	74.7

ables—i.e., that the FOMC does in fact act in accordance with the Employment Act of 1946. Moreover, the coefficients on unemployment, prices, and growth all have the correct sign, with the latter two being significant at the 1 percent and 5 percent levels, respectively. During these years price stability was easily the most important policy objective, accounting for about 39 percent of the discriminating power of the function. This emphasis on price stability would seem to conform to most observers' a priori expectations about the economic policies of the Eisenhower administration. As indicated by column B of Table III, this discriminant function correctly classifies about 79 percent of the observations¹²—the highest correct classification of any of the analyses run.

C. Kennedy-Johnson Administrations

Column C of Table II shows the results of the discriminant analysis for the Kennedy-Johnson administrations (February 1961–January 1969). Perhaps the most interesting aspect of this analysis is by way of contrast with the analysis for the Eisenhower years; the shift in emphasis from a price-stability objective to a full-employment objective is striking. Not only does the unemployment coefficient move from nonsignificance to significance (at the 5 percent level), but it goes from having the least¹³ to having the most discriminating power. The coefficient on prices, in contrast, drops in both significance and discriminating power. Again we venture the opinion that this shift of emphasis from prices to employment accords with the intuition of most knowledgeable observers.

D. Nixon-Ford Administration

The discriminant analysis of the Nixon-Ford administrations (Column D, Table II) is probably the most puzzling of the three subperiods run. What is puzzling about it is the apparent absence of concern over price-level stability. Notwithstanding the fact that the full equation is highly significant and is second only to the Eisenhower

equation in its ability to correctly classify observations (Table III), the price variable loses all significance and even falls below the balance of payments in its discriminating power. This does not accord with our a priori expectations, and we are at something of a loss to explain it. Our suspicion is that such things as the price freezes, Phases 1 . . . n (where n is some large number), the shift from fixed to floating exchange rates, the cost-push impetus of the negligible anchovy catch and the OPEC embargo—that these things resulted in a feeling of helplessness on the part of the authorities and hence in an *apparent* neglect of price stability. It is to be remembered also that the unemployment rate during the latter part of this period was extraordinarily high.

IV. CONCLUSION

The statistical results described in the previous section would seem to lead to the following conclusions. (1) The FOMC does seem to base its policy actions, in part at least, on the macroeconomic objectives of full employment, price stability, and economic growth. (2) Among these goals, full employment appears on the whole to have been given the highest priority. (3) Grouping the data by presidential administrations does seem to be a meaningful way of classifying them. Putting the matter somewhat less cautiously, the Federal Reserve's ordering of priorities does appear to be influenced by the political temper of the times.

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NOTES

1. See, in particular, Christian (1968), Dewald and Johnson (1963), Friedlaender (1973), Froyen (1974), Havrilesky (1975), Havrilesky, Sapp, and Schweitzer (1975), Keran and Babb (1969), Teigen (1969), and Wood (1967).

2. With the exception of three studies (Friedlaender, 1973; Froyen, 1974; and Keran and Babb, 1969) all prior studies and the present one do not take into account that the goals of the Fed are not necessarily restricted to the macroeconomic objectives listed in the text. Other goals, such as accommodating a Treasury debt operation, may from time to time dominate Federal Reserve behavior. We have included only the macroeconomic objectives in order to investigate their influence. It would be a misunderstanding of the purpose of this paper to interpret it as an attempt to define all the goals of the Fed.

3. For 1975 the *Federal Reserve Bulletin* was used.

4. It is to be noted that "tight" and "easy," as used here, are relative terms. Thus, if during a recession the FOMC shifts from an easy policy to one that is "slightly tighter," the latter period is classified as "tight" even though in some absolute sense it may be easier than a month classed as "easy" in the opposite case during a boom. The reason for our making the classification in this way is that our interest centers on the reaction function of the Federal Reserve; we are in no way judging the absolute state of monetary policy. We considered using the terms "tighter" and "easier," but this

leads to possible misinterpretations for those months in which no policy change occurred.

5. A more comprehensive table, which explains the underlying rationale for Table I, is available from either author upon request by any interested reader.

6. See Anderson (1969), Atkinson (1969), Hendershott (1968), and Poole (1971). Atkinson's (1969) classification stops in December 1960.

7. Since discriminant analysis is not commonly used in economics, a brief explanatory note may be in order. Discriminant analysis is a statistical technique for identifying those characteristics of two or more distinct groups (sorted a priori) that best describes the differences among the groups. The discriminant function is that function, drawn between the groups, which provides a boundary that minimizes the number of incorrect classifications. When two groupings are used, as in this study, the discriminant function has some of the same properties as a regression equation. Specifically, an F -ratio may be used to indicate the collective discriminating power of the independent variables, and a t -ratio used to test the significance of the individual coefficients. For references see Kshirsagar (1972), Ladd (1966), and Tatsuoka (1971).

A discriminant function, like a regression equation, assumes independence among the observations. However, since the dependent variable is simply a (0, 1) classification, the usual tests for autocorrelation do not apply. In our view this does not weaken our case. The decisions of the FOMC are presumably independent of one another, since the FOMC necessarily makes a distinct decision at each of its meetings.

8. We have not entered D_t in the usual (0,1) manner. Rather, for each analysis D_t during tight months is equal to the number of easy months in the period divided by the total number of months in the period. D_t during easy months is equal to the negative of the number of tight months in the period divided by the total number of months in the period. For example, during the Eisenhower period, D_t for tight months is 20/61, and D_t during easy months is $-41/61$. The advantage of assigning these values, rather than 0 and 1, is that the average value of D_t is zero. See Ladd (1966).

9. Neither the consumer price index nor the wholesale price index proved significant in the discriminant functions for the Eisenhower and Nixon-Ford years or for the entire period. While significant in the Kennedy-Johnson discriminant function, the wholesale price index did not provide superior results as compared to those obtained with the industrial commodities component of the wholesale price index. Wood (1967) also uses *IWPI*. A possible explanation for the significant results obtained with *IWPI* is that the authorities feel that agricultural prices are too dependent on such things as weather and world markets to be immediately sensitive to monetary policy. There is some evidence to support this in the FOMC's minutes.

10. The index of industrial production is used, rather than real GNP, since *IIP* is available on a monthly basis.

11. The liquidity balance of payments is used as a broad indicator of pressure on the dollar resulting from changes in the liquidity position of the United States. Due to data availability, the gross liquidity balance was used for the Eisenhower administration, while the net liquidity balance was used for the remainder of the years. Based upon our interpretation of the FOMC minutes, with regard to when estimates of the balance of payments become available to the FOMC, we have used the quarterly balance of payments data as follows. Monetary policy during the first two months of each quarter was a function of the liquidity balance for the previous quarter. The present quarterly value was used for the third month in each quarter.

12. We regard this percentage agreement between the "actual" and "predicted" intent of monetary policy as quite high, given that the FOMC undoubtedly had intermittent goals (e.g., maintaining an orderly market) that are not contained among the independent variables of the function.

13. Except for the balance of payments objective, which is not significantly different from zero in any of the analyses.

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