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AN EMPIRICAL STUDY OF POLITICO-ECONOMIC INTERACTION IN THE UNITED STATES: A REPLY

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I. Introduction

We appreciate Ahmad's extensive comments and criticisms of our politico-economic model (Frey and Schneider, 1978). For reasons of space we cannot go into all the points and criticisms Ahmad raises. In our view, it is more useful for the reader to undertake a direct confrontation of the two approaches with respect to three criteria: (i) rigour of the theoretical structure, (ii) quality of the econometric estimates and (iii) capacity for ex ante forecasting. The last criterion will be given most attention, because it is the hardest test for judging the models' applicability for explaining reality.

Section II discusses the theoretical structure of Ahmad's model, and raises some criticisms and shortcomings of it. In section III the competing models are econometrically estimated and ex ante forecasts are undertaken. We demonstrate and conclude in section IV that our model is theoretically more consistent and leads to superior ex ante forecasts.

II. Comparison of the Theoretical Structure of the Two Models

Ahmad's first major theoretical criticism of our approach is that a politico-economic model has to cover simultaneously the entire fiscal policy at the full-

employment level, and should not consider the isolated use of instruments such as government expenditures or transfers. We agree that fiscal policy has to be modelled as a whole, but it is quite debatable whether the full employment level is the correct measure for fiscal activity. Ahmad secondly argues that the president (or his administration) may also manipulate monetary policy. We certainly do not deny that a president has some influence on the monetary policy, but this influence cannot be modelled in such a simple way: The institutional conditions for the use of monetary instruments differ markedly from those of fiscal policy. This applies particularly to the United States, where monetary policy is undertaken by an (at least formally) "independent" central bank system (Federal Reserve). In order to capture correctly the influence of a president on monetary policy one has to *explicitly* model the relationship between the Federal Reserve System and the president (including his administration).¹ Ahmad's model in which the president is assumed to influence the rate of money supply directly has little theoretical meaning, especially as possibly conflicting goals between the Federal Reserve System and the president are completely ignored.

In his third and last major criticism of our model, Ahmad argues that the function describing the presidential policy response has to contain both economic

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¹ An attempt to model the interaction between a government and a central bank with respect to monetary policy has been undertaken by the authors (Frey and Schneider, 1981) for the case of Germany.

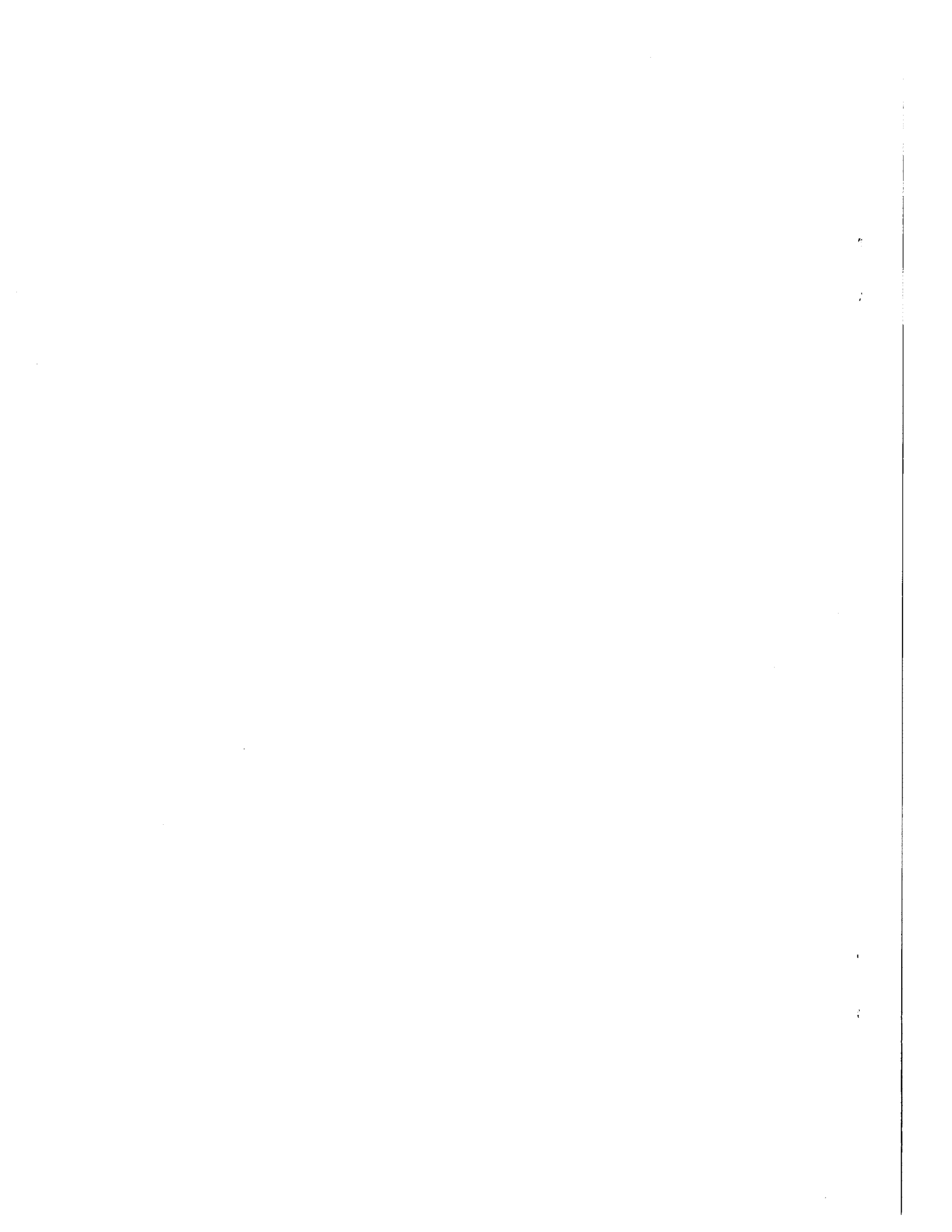


TABLE 1.—ESTIMATIONS AND EX ANTE FORECASTS USING AHMAD'S POLICY INSTRUMENTS
(the estimations extend to 1948:II–1975:II, the ex ante forecasts to 1975:III–1978:IV)

Equation	Dependent Variable	Lagged Variable <i>INST</i> _{<i>t</i>-1}	Constant	Economic Constraints				Political Constraints			Ideological Goals					Test-Statistics			Ex Ante Forecast Measures	
				Rate of Inflation <i>RI</i> _{<i>t</i>-1}	Rate of Growth of Income <i>RY</i> _{<i>t</i>-1}	Rate of Unemployment <i>RU</i> _{<i>t</i>-1}	Total Receipts as Share of GNP <i>SHTR</i> _{<i>t</i>-1}	Time Before Election <i>TBE</i> _{<i>t</i>}	Popularity Deficit <i>PDEF</i> _{<i>t</i>-1}	Popularity Surplus <i>PSUR</i> _{<i>t</i>-1}	Truman <i>DY - T</i> _{<i>t</i>}	Eisenhower <i>DY - E</i> _{<i>t</i>}	Kennedy <i>DY - K</i> _{<i>t</i>}	Johnson <i>DY - J</i> _{<i>t</i>}	Nixon <i>DY - N</i> _{<i>t</i>}	\bar{R}^2	<i>h</i>	d.f.	RMSE	THIC
Ahmad Model																				
1	$\left(\frac{RHEBD}{GNP}\right)_t$	0.865 ^b (15.73)	0.003 (1.07)	-0.075 (-0.93)	0.0004 ^b (3.47)	-0.0006 (-1.31)	—	—	0.0002 ^a (2.18)	-0.000009 (-0.09)	—	—	—	—	—	.74	1.62	102	1.009	.321
2	Money Supply Rate _{<i>t</i>}	0.658 ^b (8.30)	-0.631 (-0.65)	-23.187 (-0.79)	-0.021 (-0.48)	0.432 ^a (2.48)	—	—	-0.034 (-1.40)	-0.041 (-1.08)	—	—	—	—	—	.50	0.65	102	2.364	.280
3	$\left(\frac{RHEBD}{GNP}\right)_t$	0.654 ^b (8.99)	-0.008 (-1.54)	0.013 (0.84)	0.0003 ^a (2.67)	0.00002 (0.14)	—	—	0.0001 ^a (2.45)	-0.00005 (-0.58)	0.014 ^a (2.38)	0.009 ^a (2.66)	0.014 ^b (3.23)	0.007 (1.69)	0.009 ^a (2.51)	.80	1.31	97	0.928	.309
4	Money Supply Rate _{<i>t</i>}	0.434 ^b (4.59)	0.804 (0.46)	-50.136 (-1.64)	0.011 (0.27)	0.591 ^b (2.84)	—	—	-0.058 ^a (-2.53)	-0.014 (-0.35)	0.431 ^b (4.59)	-2.513 ^a (-2.09)	-2.314 ^a (-2.11)	-0.091 (-0.71)	-0.104 (-0.21)	.55	0.88	97	2.142	.266
Frey/Schneider Model																				
									<i>PDEF</i> _{<i>t</i>-2}	<i>PSUR</i> _{<i>t</i>-2} × (<i>DY - T</i>)	<i>PSUR</i> _{<i>t</i>-2} × (<i>DY - E</i>)	<i>PSUR</i> _{<i>t</i>-2} × (<i>DY - K</i>)	<i>PSUR</i> _{<i>t</i>-2} × (<i>DY - J</i>)	<i>PSUR</i> _{<i>t</i>-2} × (<i>DY - N</i>)						
5	$\left(\frac{RHEBD}{GNP}\right)_t$	0.758 ^b (11.52)	0.005 ^a (2.52)	—	—	—	-0.003 ^a (-2.41)	-0.005 ^a (-2.29)	0.0006 ^a (2.63)	—	-0.125 (-0.99)	-0.396 (-0.31)	0.028 ^a (2.04)	-0.016 (-0.93)	0.004 (0.98)	.79	1.14	99	0.901	.223
6	Money Supply Rate _{<i>t</i>}	0.491 ^b (7.24)	0.166 (0.30)	—	—	—	0.084 ^b (2.84)	0.249 ^b (3.62)	-0.007 (-1.13)	—	-0.095 (-0.26)	-0.065 (-1.85)	-0.048 (-1.31)	0.096 ^a (2.04)	-0.023 (-0.48)	.58	0.64	99	1.906	.188

Note: Ordinary least squares estimates; the figures in parentheses are the *t*-values; \bar{R}^2 is the coefficient of determination (adjusted for degrees of freedom); *h* shows the test-statistic against autocorrelation with lagged dependent variables; d.f. are the degrees of freedom; RMSE is the root mean squared error; THIC indicates Theil's inequality coefficient (standardized between 0 and 1).

^a Indicates statistical significance at the 5% level in a one-tailed test.
^b Indicates statistical significance at the 1% level in a one-tailed test.

and political determinants for each policy instrument. Ahmad maintains that we disregard economic influences on presidential policy. According to Ahmad a president *always* and *immediately* reacts to changes in economic conditions irrespective of whether he feels that his reelection is in danger (popularity deficit) or not (popularity surplus). In our view, Ahmad's approach does *not* have a theoretically convincing structure; he does not explicitly model the relationship on the basis of a general model of behavior. To exemplify: A president has no incentive to act immediately whenever economic or political conditions change. Only if a president always wants the "good of society" and thus acts like a "benevolent dictator" would such behavior make sense. Even if such altruistic behavior is taken to be a realistic theoretical assumption (against the evidence collected in public choice), Ahmad's own econometric estimates do not support it. In his fiscal policy function (see his tables 4 and 5) an increase in the unemployment rate and/or in the inflation rate does, for example, not lead the president to undertake any fiscal policy action (insignificant coefficients). Thus Ahmad's "benevolent dictator" is of a strange kind: On the fiscal side he—*ceteris paribus*—reacts with an *increase* in the full employment federal budget deficit when the rate of income grows, and with a *decrease* in the full employment budget deficit when the president suffers a popularity deficit.²

Our view of the goals of presidential policy and of the use of the instruments is quite different: Presidents want to put ideological goals into practice (as is currently evidenced, for example, by President Reagan) and deviate only from them when reelection is in danger and the next election is forthcoming. In such a situation economic conditions do indeed have a strong effect on fiscal policy in our model (which Ahmad seems to overlook) by influencing the president's popularity (compare the estimations of the popularity functions in our 1978 paper), the best available indicator of his reelection chances. Whatever the reasons are for a popularity deficit (economic and/or political events) appearing before an election, the president acts by stimulating the economy. This kind of policy holds for the period investigated (1948–78) because the rate of unemployment and growth of income together had by far a greater impact on presidential popularity than inflation.³ Our approach seems to have

² Ahmad's results on monetary policy are not discussed here due to the lack of space. It should be noted, however, that he gets the wrong sign in his ordinary least squares estimates for the popularity deficit variable. The coefficient turns out to be significantly negative but is theoretically postulated to be positive in the case of both policy instruments.

³ This is also true for President Nixon in his election campaign 1971/72 where he suffered a popularity deficit from

a better theoretical structure to model the president's behavior in a more rigorous way.

III. Ex Ante Forecasts of the Two Competing Models

As it is always possible to dispute about different theoretical approaches, the crucial test is how the models work to explain reality. We therefore have estimated:

1. *Ahmad's policy instruments*, contrasting his model specification with our model specification,⁴ and
2. *Our instruments*, contrasting Ahmad's model specification with our model specification.

In both cases we use Ahmad's data, the same definition of the dependent variables (shares, rates), the same estimation period (1948:II–1975:II), and the same estimation technique—ordinary least squares (OLS). In addition, ex ante forecasts over the period 1975:III to 1978:IV are computed for both models and compared with each other.

A. Estimations and Forecasts with Ahmad's Policy Instruments

The results of the OLS estimations and the ex ante forecasts for both models using Ahmad's policy variables (real high employment federal budget deficit, *RHEBD*, as share of GNP and the rate of growth of money supply) are presented in table 1. Equations 1 to 4 present the Ahmad model without (equations 1 and 2) and with (equations 3 and 4) ideological influences as defined by Ahmad.⁵ The estimation results are quite similar to the ones in Ahmad's tables 4 and 5 and will not be discussed here. Equations 5 and 6 show the results using our approach (as described in our 1978 paper). In the fiscal policy equation the variables "time before election" and "popularity deficit" have the theoretically expected significant influence. Only for Kennedy are the ideological influences statistically significant. The \bar{R}^2 values (adjusted for degrees of

1971:I to 1972:I, which contradicts the statement made by Ahmad.

⁴ As argued above, an explicit model between the interaction of the president and the Federal Reserve would be needed to model the use of the monetary policy instruments. Hence Ahmad's equation describing monetary policy makes little theoretical sense. The respective estimations (and ex ante forecasts) are presented in tables 1 and 2 only in order to show that we are not hiding results possibly negative to us.

⁵ Ahmad criticizes us because we use dummy variables to capture the different ideological policies of the administrations investigated; but then, he also includes these variables in his estimation equations without any theoretical justification (and theoretical discussion of the expected signs), possibly in order to increase the goodness of fit.

TABLE 2.—ESTIMATIONS AND EX ANTE FORECASTS USING FREY AND SCHNEIDER'S POLICY INSTRUMENTS
(the estimations extend to 1948:II–1975:II, the ex ante forecasts to 1975:III–1978:IV)

Equation	Dependent Variable	Lagged Dependent Variable $INST_{t-1}$	Constant	Economic Constraints				Political Constraints			Ideological Goals					Test-Statistics			Ex Ante Forecast Measure	
				Rate of Inflation RI_{t-1}	Rate of Growth of Income RY_{t-1}	Rate of Unemployment RU_{t-1}	Total Receipts as Share of GNP $SHTR_{t-1}$	Time Before Election TBE_t	Popularity Deficit $PDEF_{t-1}$	Popularity Surplus $PSUR_{t-1}$	Truman $DY - T_t$	Eisenhower $DY - E_t$	Kennedy $DY - K_t$	Johnson $DY - J_t$	Nixon $DY - N_t$	\bar{R}^2	h	d.f.	RMSE	THIC
Ahmad Model																				
7	$\left(\frac{FEXP}{GNP}\right)_t$	0.893 ^b (20.41)	0.306 ^a (2.15)	0.894 (0.38)	-0.037 (-0.92)	-0.176 (-1.34)	—	—	0.003 ^a (2.67)	-0.017 (-0.99)	—	—	—	—	.78	1.33	102	1.572	.383	
8	$\left(\frac{FTRAN}{GNP}\right)_t$	0.948 ^b (28.37)	0.364 (1.73)	12.164 (1.98)	-0.049 ^b (-6.25)	0.138 ^a (2.68)	—	—	0.005 ^a (2.54)	-0.006 (-0.63)	—	—	—	—	.90	-0.58	102	2.287	.310	
9	Fed. Empl. Rate _t	0.879 ^b (21.43)	9.851 ^b (7.41)	5.127 ^a (2.71)	0.094 ^b (3.37)	0.022 (1.67)	—	—	0.004 ^a (2.25)	0.003 (0.17)	—	—	—	—	.70	1.76	102	2.164	.445	
10	$\left(\frac{FEXP}{GNP}\right)_t$	0.839 ^b (11.891)	0.762 ^a (2.38)	2.632 (0.66)	-0.047 (-0.99)	-0.339 (-1.64)	—	—	0.004 ^a (2.73)	-0.037 (-0.42)	-0.037 (-0.92)	-0.256 (-1.67)	0.895 (1.76)	-0.134 (-0.99)	-0.198 (-0.84)	.79	1.21	97	1.365	.325
11	$\left(\frac{FTRAN}{GNP}\right)_t$	0.907 ^b (19.671)	1.793 ^b (2.89)	9.499 (1.48)	-0.047 ^b (-5.73)	0.163 ^b (2.84)	—	—	0.006 ^b (2.78)	-0.005 (-0.71)	-1.476 ^a (-2.51)	-1.294 ^a (-2.61)	-0.942 (-1.63)	0.697 (1.68)	-1.215 ^a (-2.19)	.91	-0.39	97	2.186	.293
12	Fed. Empl. Rate _t	0.747 ^b (19.77)	8.994 ^b (9.08)	9.081 ^b (4.34)	0.084 ^a (2.54)	0.021 (1.64)	—	—	0.005 ^a (2.38)	0.006 (0.47)	3.387 ^b (2.91)	1.803 (1.37)	2.591 ^a (2.30)	2.248 ^a (2.21)	1.093 (1.09)	.71	1.32	97	1.314	.415
Frey/Schneider Model																				
									$PDEF_{t-1}^2$		$PSUR_{t-1}^2 \times (DY - T)$	$PSUR_{t-1}^2 \times (DY - E)$	$PSUR_{t-1}^2 \times (DY - K)$	$PSUR_{t-1}^2 \times (DY - J)$	$PSUR_{t-1}^2 \times (DY - N)$					
13	$\left(\frac{FEXP}{GNP}\right)_t$	0.858 ^b (17.41)	0.806 ^b (2.99)	—	—	—	0.051 ^b (2.88)	0.048 ^a (2.25)	0.005 ^a (2.46)	—	-0.138 (-1.21)	-0.423 ^a (-2.13)	0.183 ^a (2.09)	0.096 (1.04)	-0.149 ^a (-2.06)	.82	1.06	99	1.026	.216
14	$\left(\frac{FTRAN}{GNP}\right)_t$	0.890 ^b (18.43)	0.422 ^a (2.26)	—	—	—	0.145 ^b (4.78)	0.059 ^a (2.59)	0.004 ^a (2.48)	—	-0.148 (-1.36)	-0.096 (-0.89)	0.134 (1.38)	0.147 ^a (2.09)	-0.095 ^a (-2.01)	.94	-0.28	99	0.749	.184
15	Fed. Empl. Rate _t	0.713 ^b (18.90)	9.691 ^b (8.91)	—	—	—	0.039 ^a (2.23)	0.030 (1.75)	0.003 ^a (2.01)	—	0.118 (1.47)	-0.021 (-0.53)	0.188 (1.74)	0.287 (1.57)	-0.095 ^a (-0.79)	.75	-0.94	99	1.067	.313

Note: *FEXP* = Federal expenditures on goods and services; *FTRAN* = Federal transfer payments to the household sector; *Fed. Empl. Rate* = Federal civilian employment in yearly rates; for further notes see table 1.

^a Indicates statistical significance at the 5% level in a one-tailed test.

^b Indicates statistical significance at the 1% level in a one-tailed test.

freedom) in all six equations are reasonably good and show no great difference between the two models.

With respect to the ex ante forecasts (last two columns of table 1) our approach is consistently *superior* compared to the Ahmad model judging from the root mean squared error, RMSE, and Theil's inequality coefficient, THIC. Both measures show lower values for our model compared to Ahmad's. For the share of public expenditures, the RMSE falls from 1.01 and 0.93 (equations 1 and 3) in Ahmad's model, to 0.90 (equation 5) in our model; Theil's inequality coefficient decreases from 0.32 and 0.31 (equations 1 and 3) in Ahmad's model, to 0.22 (equation 5) in our model.

B. Estimations and Forecasts with Our Policy Instruments

The estimations and ex ante forecasts for both models using our policy variables (federal expenditures and federal transfers both as shares of GNP, and the rate of federal civilian employment) are given in table 2. Equations 7 to 12 show the results using the Ahmad model without and with ideological influences. The results for the Ahmad model show in some cases a significant influence of the three economic variables on the share of transfers and on the rate of civilian employment. A popularity deficit of the president has a significant (positive) impact on all three instruments.

The results of the estimates for our own model (equations 13 to 15) are quite similar to those of the 1978 study. All coefficients relating to political influences have the expected positive signs and are statistically significant (with one exception: "time before election" in the case of the civilian employment rate). The coefficients relating to ideological goals have in 5 out of 15 cases a significant influence: The share of federal civilian expenditures was *ceteris paribus* reduced under Presidents Eisenhower and Nixon, and raised

under President Kennedy; President Nixon *ceteris paribus* reduced all policy instruments. Comparing again the R^2 of the two approaches the estimations of our model perform somewhat better.

A comparison of the ex ante forecasts between both models—which in our view is the really hard test—shows our approach to yield clearly superior results. Both the root mean squared error (RMSE) and Theil's inequality coefficient (THIC) have lower values. The RMSE for public expenditures drops, for example, from 1.57 and 1.37 (equations 7 and 10) in Ahmad's model, to 1.03 in our model (equation 13), and in the case of transfers from 2.29 and 2.19 (equations 8 and 11) in Ahmad's model, to 0.75 (equation 14) in our model.

IV. Conclusion

Evaluating the theoretical and empirical analysis of the two competing approaches we are able to conclude: (1) Ahmad's alternative approach has no convincing theoretical structure and no explicit modelling of the behavior of U.S. presidents and their use of policy instruments, and (2) ex ante forecasts undertaken for both models using both types of policy instruments over the period 1975:III–1978:IV indicate that our model is superior in explaining the actual use of these instruments.

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