
The Political Economy of New Deal Spending: An Econometric Analysis

Author(s): Gavin Wright

Source: *The Review of Economics and Statistics*, Vol. 56, No. 1 (Feb., 1974), pp. 30-38

Published by: The MIT Press

Stable URL: <http://www.jstor.org/stable/1927524>

Accessed: 24/02/2009 16:21

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=mitpress>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit organization founded in 1995 to build trusted digital archives for scholarship. We work with the scholarly community to preserve their work and the materials they rely upon, and to build a common research platform that promotes the discovery and use of these resources. For more information about JSTOR, please contact support@jstor.org.



The MIT Press is collaborating with JSTOR to digitize, preserve and extend access to *The Review of Economics and Statistics*.

THE POLITICAL ECONOMY OF NEW DEAL SPENDING: AN ECONOMETRIC ANALYSIS

Gavin Wright*

THE New Deal years offer a laboratory for testing the hypothesis that political behavior in a democracy can be understood as a rational effort to maximize the prospects of electoral success. This hypothesis is central to the "economic" theories of politics developed and elaborated since the publication of Downs' *An Economic Theory of Democracy* in 1957, but systematic empirical verification has been meager.¹ One of the reasons for this paucity is that in the United States political parties are rarely "in power" unambiguously, and actual policies result from the interaction of many competing objectives. But in the 1930's the Democratic party had control of both houses of Congress, and during much of the period Congress was willing to follow Presidential lead on economic policy. At the same time federal spending rose to unprecedented levels, and considerable discretionary allocative authority was concentrated in the executive branch. Most of the spending was carried out by new agencies under new programs which were clearly identified with the New Deal administration. At a time of grave economic distress, this Presidentially-dominated environment provided a stark simplification of the interaction between political and economic forces.

This article focuses on the allocation of government expenditures among the states and argues that interstate inequalities in per capita federal spending can be explained in large part

as the resultant of a process of maximizing expected electoral votes. Two recent articles (1969, 1970) by Leonard J. Arrington have raised this issue. Upon examination of a newly-discovered set of figures for the years 1933–1939, Arrington was struck by the fact that the per capita distribution of loans and expenditures was not at all equal across the country, and furthermore that these inequalities seem perverse in that they favor states with high income. In particular, the West seems to have received far more than its per capita share of benefits, while the South — far behind in income — received little.

Arrington (1970, p. 352) analyzed the pattern of agricultural spending and showed that per capita loans and expenditures were highly correlated with the fall in farm income between 1929 and 1932, rather than with income levels.² The interpretation suggested is that farm policy was not "reform-oriented" or "equality-oriented," but rather sought to "restore a pre-existing balance whether or not the antecedent balance was 'just' between farmers in different parts of the country."

This argument is not unreasonable, but it ignores a political dimension to the matter — listed earlier by Arrington as a possibility — namely, that "the South was safely in the Democratic fold," while the rest of the country, especially the West, was politically uncertain. Examination of voting data shows not only that national elections in the South were much more lopsided than those in the rest of the country, but also that the West had a unique variability in voting, as measured by the standard deviation of the Democratic percentage of the total Presidential vote, 1896–1932. It is also evident that Western states typically had lower electoral vote allotments than states in other regions. These suggestive facts point toward a more general analysis at the state level rather than

Received for publication March 26, 1973. Revision accepted for publication June 18, 1973.

*I am grateful to Stanley Engerman, Susan Lepper, Christopher Sims, and Sidney Winter for comments on drafts of this article. I am indebted to Don Reading not only for comments but for making available to me a draft of his dissertation containing a wealth of data on New Deal spending. Earlier drafts were presented to the Economic History Workshop at the University of Chicago, and to the Cliometrics Conference at Madison, Wisconsin in April, 1972. Time for research was made available by fellowship support from the National Science Foundation and the Economics Department of the University of Chicago.

¹A good summary of the theoretical literature relating government strategies to voter preferences, including several corrections of Downs, may be found in Davis, Hinich, and Ordeshook (1970).

²Arrington (1970, p. 349), Reading (1972, p. 307), and my own work all indicate a positive but insignificant correlation between income levels and spending.

the regional. Such an analysis sheds light not only on New Deal strategy but also on characteristics of the electoral college system of electing Presidents, and on the biases in state "power" which the winner-take-all feature imposes.

A Model of the Political Allocation of Funds

Suppose that each state has a "voting function" according to which income received affects its vote for the incumbent, in this case the Democrats:

$$D_i = D_{io} + bY_i \quad (1)$$

where D_i = the percentage Democratic vote in state i ; D_{io} = the "initial" or "autonomous" Democratic vote; Y_i = per capita *new* income payments made in state i and attributable to government policy. Recent econometric work by Gerald Kramer (1971), Susan Lepper (1972), and Kramer-Lepper (1972) has shown that aggregate voting behavior does indeed depend on economic variables, particularly changes in real income. It follows that government spending decisions should have an impact on voting behavior.

It may be objected that I seem to have government generating "income" out of thin air — there are no taxes involved. But in the 1930's government really could generate income out of "thin air" because of the abundance of unemployed resources. It is true that the federal government felt obliged at times to raise taxes; if they had not felt *some* budget constraint, there would be no allocation problem. But there was no close association between spending decisions and taxing decision, and there is little reason to separate taxation from other policies which may have alienated voters.

In the case of complete certainty, if electoral vote maximization is the only goal, it is evident that spending has no value in a state for which $D_{io} > 0.5$. In other states, spending has value only when it brings D_i up to 0.5; the appropriate level of spending is given by:

$$\bar{Y} = \frac{0.5 - D_{io}}{b} \quad (2)$$

A priority index for these minority states would be:

$$\frac{v_i b}{(0.5 - D_{io}) POP_i} \quad (3)$$

where v_i = the electoral vote level of the state, and POP_i = the state's population.

If D_{io} is taken as the 1932 share, the recommendation would be to spend nothing outside of the six states that Hoover carried. A more realistic alternative is to consider D_{io} as a historical average or prediction, the level to which the vote would return if the administration improved no one's income. A second consideration is the motive of the administration in trying to increase its winning majorities within states, so as to increase the number of sympathetic Congressmen pulled in by "coat-tails" effects. But the crux of the problem is the uncertainty surrounding the vote as a whole. A state with $D_{io} = .501$ is a high-priority state, not a zero-priority state. For this reason I redefine the goal as the maximization of the expected value of the electoral vote total:³

$$E(V_D) = \sum_{i=1}^{48} v_i P_r(D_i > 0.5). \quad (4)$$

If each D_i is regarded as normally distributed around a mean of $D_{io} + bY_i$, the problem is then

$$\begin{aligned} \text{maximize } E(V_D) &= \sum_{i=1}^{48} v_i \int_{0.5}^{1.0} \frac{1}{\sigma_i \sqrt{2\pi}} e^{-\frac{1}{2} \left(\frac{D_i - bY_i - D_{io}}{\sigma_i} \right)^2} dD_i \\ \text{subject to } \sum_{i=1}^{48} Y_i (POP_i) &= \bar{Y} \end{aligned} \quad (5)$$

where σ_i = the standard deviation of state i 's Democratic share, and \bar{Y} = the total amount of

³ Several arguments have been advanced against the *theoretical* appropriateness of this behavioral goal, but for the most part it seems appropriate for the problem at hand. Maximizing votes will not invariably be the same as maximizing the probability of winning, as for example when a tactic is potentially very productive but risky (Kramer 1966, p. 140). But expected vote maximization, as Kramer found, is far easier to work with, and spending decisions can be adjusted in incremental ways which do not carry great risks. W. H. Riker (1962) has argued that in political situations similar to zero-sum games, parties will seek to attain "minimum winning coalitions." But it is not clear that Riker's conception of a "coalition" is relevant here, because a state's vote for a Presidential candidate does not obligate him to "pay off" the citizens of that state.

government spending, assumed to be fixed by outside constraints.

The difficulties of dealing with (5) analytically appear to be prohibitive. For any given \bar{Y} it is a relatively straightforward numerical calculation to ascertain the optimum allocation, but it will in general be true that the optimum proportionate allocation by states will change with the level of \bar{Y} in absolute terms. It is by no means simple to identify the appropriate \bar{Y} in absolute terms: for example, many construction projects had substantial sponsors' contributions; states received grants-in-aid, and a variety of loans and matching-grant systems were employed. More serious, in my view, are the *practical* constraints on the government's ability to carry out such policies: for all its strength, the administration was operating within the constraints of political "reasonableness." It is doubtful that any state could have been cut off completely from federal funds.⁴ And while the administration could "compensate" for over-generous agencies elsewhere in the budget, it could hardly have actually retrieved these funds from their recipients. For these reasons I have settled on a looser formulation for empirical purposes.

I proceed as follows: By fitting a linear trend to the Democratic share over the years 1896–1932, I compute a "predicted" D_{i0} for each state. Taking this figure as the means of a probability distribution of election outcomes, and employing the standard deviation estimates around the trend, I then compute the "probability" of winning each state if there is no other change. I then argue that a given amount of spending shifts the entire curve to the right. In the simplest formulation, votes which are bought are definitely bought, though the election result remains uncertain. One can then compute the *change* in the probability of winning each state, for any given purchase of votes. The expected value of a state's contribution to the electoral vote total is

$$E_i = v_i Pr_0(D_i > 0.5) \quad (6)$$

⁴ See, for example, Howard 1943, p. 603: "The WPA would face almost insuperable obstacles if it ever attempted to close down operations in any given state . . ." Even a small share of federal benefits could serve as a lever to keep state party officials in line; a complete cutoff would ensure an active opposition to the New Deal.

and the "value" of (say) a shift of one percentage point is

$$E_i = v_i | Pr_1(D_i > 0.5) - Pr_0(D_i > 0.5) | = v_i \Delta Pr_{.01} \quad (7)$$

Since Y_i is on a per capita basis, we have to divide ΔE_i by 1% of the total vote T in the state (i.e., the number of bought votes involved). The resulting expression

$$VL_i = v_i \Delta Pr_{.01} / (.01T) \quad (8)$$

is an index of the "productivity" of a given amount of spending in state i , assuming equal vote-responsiveness across states. The index measures the effect of the level and slope of the normal curve at the 0.5 line, as well as the effect of size. The index does have the following weakness: as a strictly marginal measure, it fails to capture the diminishing returns of spending in low-variance states. Hence I have added the standard deviation as a separate term in the regressions below. Other things being equal, the government should spend more in a state with high variance than one with low variance, even if both have identical initial VL 's (provided the budget is large enough to reach the point of diminishing returns in both states).

A different rationale for the same combination of variables (which does not require the parenthetical qualification) is to view σ_i as an index of the "flexibility" of a state's voters. If short-run variations in voting shares are largely explained by economic fluctuations (as Kramer and Lepper suggest), then the variance around the historical trend can be interpreted as a measure of the responsiveness of a state to changing economic fortunes. That is, the linear voting function (1) would be replaced by a function in which the coefficient b is a function of σ . This change would provide an alternative rationale for low spending in low-variance, solidly Republican states (meaning, in this period, Maine and Vermont). This line of argument is supported by evidence that the income-responsiveness of votes is markedly higher in the states with high σ than in the low- σ states.⁵ Presumably this characteristic is related to the underlying socio-economic structure of the state, which one would expect to be rather stable over short periods of time.

⁵ Available from the author on request.

In either formulation, coefficients relate to the "mix" of spending for a given budget size, and hence should not be extrapolated to budgets of very different magnitude.

The Estimation of Spending Functions

This section summarizes the statistical evidence. Attention is focused initially on the distribution of aggregate expenditures of all kinds (*SPND*), 1933–1940, as transcribed by Arrington (1969) from 1940 documents of the Office of Government Reports.⁶ All regressions are run on a cross section of 48 states. The *t*-ratio appears in parenthesis below each coefficient, and asterisks denote significance at a 90% confidence level.

As a basis for comparison, I begin with a purely economic regression suggested by Arrington's argument:⁷

$$\begin{aligned} SPND = & 0.017 + 0.120F - 0.860\Delta Y_{29-32} \\ & (0.66) \quad (1.45) \\ & + 0.858*RLF35 \quad R^2 = .171 \\ & (2.07) \end{aligned} \quad (9)$$

where *F* = proportion of the state's population living on farms; ΔY_{29-32} = change in per capita income, 1929 to 1932; *RLF35* = number of cases on general relief per capita, January 1935 (the peak month).

One can do much better with a simple explanation of *SPND* as a function of the "political productivity" index (*VL32*) and the standard deviation (*SD*);

$$\begin{aligned} SPND = & -0.115 + 0.151F + 2.329*VL32 \\ & (1.34) \quad (4.58) \\ & + 0.0285*SD \quad R^2 = .587. \\ & (6.88) \end{aligned} \quad (10)$$

As an alternative for purposes of comparison, I have also estimated a "rule-of-thumb" version

⁶ Only regressions on expenditures are reported, but the conclusions of the article hold for loans and expenditures combined. A full list of data sources is obtainable from the author.

⁷ The variable *F* is included in all the regressions in the article, although it was not suggested explicitly by Arrington (whose work was concerned only with the farm sector). The rationale for including *F* is that the relevant "costs" of equivalent programs differed in a rural setting, and voting patterns clearly were different among farmers. Furthermore, it may be that federal expenditures have quite different impacts on rural economies than on urban and industrialized areas.

of the political model, in which spending is simply a linear function of the three components of the calculation: electoral votes per capita (*V/POP*), variability (*SD*), and closeness (*CLS32*, the absolute difference between .500 and the "predicted" level of the Democratic share in 1932):

$$\begin{aligned} SPND = & -0.066 + 0.120*F \\ & (2.28) \\ & + 26.961*V/POP \\ & (9.13) \\ & + 0.0182*SD - 0.0018 CLS32 \\ & (5.96) \quad (1.27) \\ R^2 = & .796. \end{aligned} \quad (11)$$

We thus find that a "political" model explains between 58.7% and 79.6% of the variance in per capita spending over the whole period! In (11), the variation in *V/POP* is particularly important. Small wonder that the small states favored the system of centralized discretionary disbursement (Charles 1963, p. 34).

Alternative interpretations of (11) are possible, because *V/POP* also corresponds to a state's representation in Congress. The model presented here assumes that no small group is in a position to "deliver" a state's vote, and hence there is no reason to "reward" the citizens of a state which is already "in the bag." But votes in Congress can be "delivered," and they can at times command a high price. Despite Roosevelt's power, he had a fairly long list of "must" legislation during the period and may well have used discretionary spending power to build Congressional support for these programs. A coefficient for *V/POP* might also be predicted on the basis of a "logrolling" model. Furthermore, many of the state-allocation formulas developed in pre-New Deal days such as highway programs, involved a component distributed equally by states, and these formulas still played a role in the 1930's (Key 1937, pp. 219–340). These factors may qualify the very high *R*² of (11), but it is difficult to rationalize (10) on this basis. Significantly, the variability term is important in both regressions — a state characteristic surely beyond the control of the "bosses." Similar results are obtained when the model is applied separately to the two Presidential elections in the period.

The main empirical question which might be raised about these findings is whether *VL*, *V/POP*, and *SD* are not simply acting as proxies for some other variable which has nothing to do with political strategy. Spending levels are so concentrated in the West that *any* variable which distinguishes the West (such as high standard deviation) is bound to be correlated with spending. However, examination of the residual patterns indicates that (10) and (11) achieve a high degree of discrimination *within* as well as among regions. Furthermore, a search for alternative criteria has turned up nothing which overturns the conclusions. The strongest argument is that spending was high in the West simply because large areas of Western land were *owned* by the federal government, and expenditures were required for maintenance and development of these resources. This variable — percentage of state area federally owned — is indeed correlated with *SPND*, but the basic pattern predicted by the model remains intact (albeit with reduced coefficients and *t*-ratios).

$$\begin{aligned}
 SPND &= 0.002 + 0.178*F \\
 &\quad (1.91) \\
 &+ 1.250*VL32 \\
 &\quad (2.65) \\
 &+ 0.0144*SD + 0.0047* \%FEDLND \\
 &\quad (3.23) \quad (4.79) \\
 R^2 &= .731.
 \end{aligned}
 \tag{12}$$

This result also holds for the “rule-of-thumb” specification, and for each elected term considered separately. Further tests involved incorporation of other variables reflecting economic “distress”: the fall in income from 1929 to 1932 (ΔY_{29-32}); per capita cases on relief (*RLF35*); and unemployment (*UN37*).

$$\begin{aligned}
 SPND &= -0.058 + 0.238*F \\
 &\quad (1.95) \\
 &+ 1.360*VL32 \\
 &\quad (2.74) \\
 &+ 0.0109*SD - 0.540\Delta Y_{29-32} \\
 &\quad (2.06) \quad (1.36) \\
 &+ 0.093RLF35 - 0.0043UN37 \\
 &\quad (0.34) \quad (0.23) \\
 &+ 0.0048* \%FEDLND \quad R^2 = .745. \\
 &\quad (4.79)
 \end{aligned}
 \tag{13}$$

These variables have virtually no effect.⁸ If the order of operations is reversed, the political variables significantly reduce the residual variance of any purely “economic” model yet discovered. Efforts to improve the correlation by use of the Shubik-Shapley (1954) power index (Mann and Shapley 1964) were completely fruitless.

The Allocation of Work-Relief Jobs

This section applies the same analysis to the allocation of jobs by the Works Progress Administration and other work-relief agencies. Particularly in the context of the Depression, “jobs” may be a more relevant political variable than “income.” One might also expect job-allocation to be function of wage-levels, which varied quite markedly between regions (Howard 1943, p. 160; Huzar 1940, p. 330).⁹ *Ceteris paribus*, efficiency considerations point toward concentration in low-wage states, where both “votes” and “jobs” are presumably cheaper. I assume that labor was available at infinite elasticity at wage levels which were not altered by federal spending.¹⁰

The distribution of WPA employment was “a storm center from the beginning” (Howard 1943, p. 596), and charges of discrimination were common, most especially from governors who believed they were being shortchanged (Patterson 1969, pp. 54, 57, 77, 81, 198–200). Apprehension about the motives of WPA was promoted also by the fact that “the WPA was most reluctant to give out any information about the way in which state employment quotas were determined” (MacMahon et al. 1941, p. 223).¹¹ The critics’ strongest piece

⁸ In the “rule-of-thumb” version, the same variables showed some correlation with *SPND*, but only *RLF35* was statistically significant, and the basic political argument was not affected.

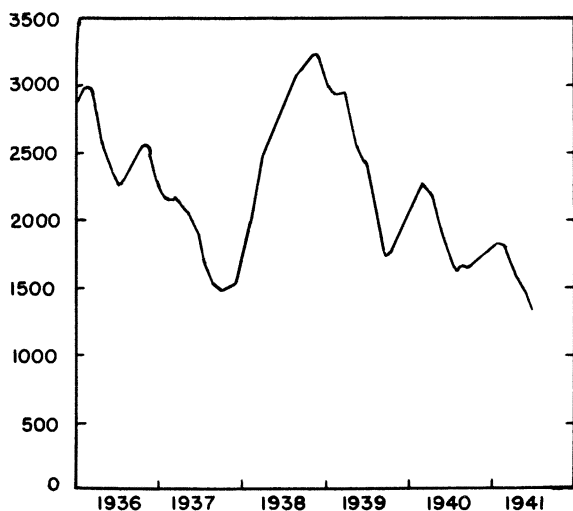
⁹ There were several changes in the precise definition of WPA wage policies, but all definitions were based on local wage rates and involved regional differences (MacMahon et al. 1941, p. 155; Howard 1943, pp. 158–228).

¹⁰ It appears that a large “reserve army” of unemployed was available throughout the 1930’s. It is estimated that WPA employment covered between 18% and 40% of the total unemployed (WPA Final Report, p. 130). At all times there were from 350,000 to 900,000 certified as eligible but without work, and another 1.5 million to 2.3 million on relief but not certified (Charles 1963, p. 231).

¹¹ The WPA displayed remarkable dexterity in refusing to divulge the bases for the determination of state quotas.

(continued on next page)

FIGURE 1. — NUMBER OF PERSONS EMPLOYED BY WPA, 1936–1941
(in thousands)



of evidence that jobs were being used as political tools was the time-series of figures 1 and 2. WPA employment reached peaks in the fall of election years, and the pattern is most pronounced when employment is measured relative to indices of “need” (Figure 2). In 1939 WPA appropriations were cut back, and Congressional pressure forced the agency to state its allocative criteria much more explicitly (though it never quite revealed a precise formula). (See Howard 1943, p. 116, 586–599.)

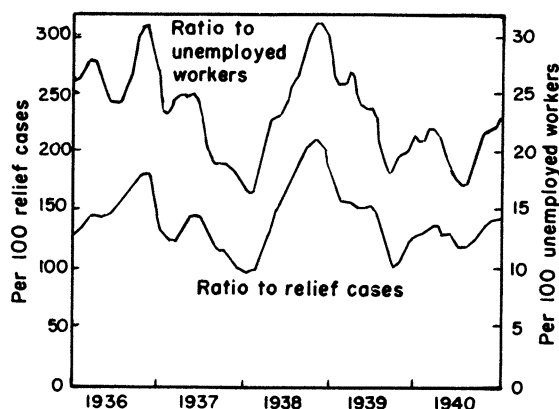
This brief historical sketch fits well with the regression results. The distribution of jobs, even at election time, was strongly related to relief and unemployment levels. But table 1 indicates that political strategy was also involved: the political model alone explains 36.7% of the variance [equation (14)] and the equation combining political and economic variables [equation (15)] performs significantly better than either taken separately. Consistent with the political history, the 1940 regressions show a poor correlation between jobs and $VL36$.¹²

(footnote 11 continued)

Some relationship to relief rolls could hardly be avoided, since Congress stipulated that 90% of all workers had to be certified on relief. But this was not a binding constraint, because workers could go “on relief” for the express purpose of obtaining a WPA job, and because many persons were “in the pipeline”—certified as eligible but not yet provided with work (Charles 1963, p. 231).

¹² Experimentation with a Congressional-election strategy

FIGURE 2. — WPA EMPLOYMENT PER 100 UNEMPLOYED WORKERS, AND PER 100 GENERAL RELIEF CASES, 1936–1941



Source: Howard 1943, pp. 534, 537.

Regressions (15) and (17) show no significant relationship between job-allocation and wage-levels. The allocation of WPA funds, however, is completely dominated by wage levels. Apparently WPA “demand” for labor was not wage-elastic on either political or economic grounds.

There may be grounds for suspicion in the fact that the results for the aggregate spending figures are better than those of a major component. But perhaps this is reasonable. Clearly no single agency embodied the entire philosophy and purpose of the New Deal. A plausible interpretation of the process as a whole is that a “balancing” mechanism operated at the most centralized level. If some area were receiving a great deal of highway construction or soil conservation funds—more than is politically called for—an effort might be made somewhere in the budget to shift funds away from that state. Such a mechanism may also have allowed the executive branch to offset apparent “concessions” to congressmen, by appropriately adjusting other budget items.

Was the Political Strategy Effective?

This section contains modest evidence to the effect that the spending patterns of the New Deal did indeed have an effect on the vote.

model for 1938 suggests that spending in that year was a function of the number of “swing” Congressional seats and Senatorial candidates. As expected, the Presidential model fails completely in that year.

THE REVIEW OF ECONOMICS AND STATISTICS

TABLE 1. — REGRESSION COEFFICIENTS FOR WORK-RELIEF JOBS

	(14) WRK36	(15) WRK36	(16) WRK36	(17) WRK40	(18) WRK40
Constant	0.011	0.007	0.005	0.009	-0.003
<i>F</i>	0.008 (1.26)	0.012 (1.61)	0.002 (0.49)	0.013* (1.85)	0.020* (4.05)
<i>VL32, VL36</i>	0.079* (3.09)	0.077* (3.01)	0.065* (3.50)	-0.001 (0.04)	0.006 (0.25)
<i>SD#</i>	0.810* (3.71)	0.640* (2.31)	0.370* (2.18)	0.430* (2.58)	0.550* (3.99)
<i>RLF35</i>			0.074* (6.48)		
<i>UN37</i>					0.0021* (2.80)
<i>PAY</i> ^a		0.090 (1.00)		-0.003 (0.02)	
<i>R</i> ²	0.367	0.382	0.684	0.349	0.438

^a Indicates coefficients multiplied by 10³.

* Indicates statistical significance at 90% level (*t*-ratios in parentheses).

Variable Definitions:

F = percentage of state population on farms

VL32, VL36 = index of political productivity

SD = standard deviation of Democratic share

RLF35 = number of cases on general relief (per capita), January 1935

UN37 = number of totally and partially unemployed (per capita), from special census of 1937

WRK36 = persons employed on WPA and other federal work relief programs, December 1936 (per capita)

WRK40 = persons employed on WPA and other federal work-relief programs, November 1940 (per capita)

PAY = average WPA wage in state during year.

TABLE 2. — REGRESSION COEFFICIENTS: CHANGE IN DEMOCRATIC SHARE OF VOTE AS FUNCTION OF INCOME CHANGE AND FEDERAL PROGRAMS

	(19) ΔD36	(20) ΔD38	(21) ΔD40	(22) ΔD36	(23) ΔD38	(24) ΔD40
Constant	-0.021	0.023	-0.021	-0.026	0.018	-0.021
Δ <i>F</i>	1.51* (2.79)	0.946 (1.48)	1.82* (2.86)	1.71* (3.02)	0.814 (1.35)	1.819* (2.82)
Δ <i>Y</i> ^a	0.890* (3.43)	1.179* (4.45)	-0.524 (1.33)	0.853* (3.27)	1.136* (4.54)	-0.516 (1.23)
Δ <i>SPND</i>				0.076 (1.14)	-0.551 (2.59)	0.010 (0.06)
<i>R</i> ²	0.364	0.306	0.156	0.382	0.398	0.156
		(25) ΔD36	(26) ΔD38	(27) ΔD40		
Constant		-0.005	0.009	-0.035		
Δ <i>F</i>		2.07* (3.15)	0.866 (1.36)	1.641* (3.21)		
Δ <i>Y</i> ^a		0.957* (3.67)	1.060 (3.96)			
Δ <i>WRK</i>		0.371 (0.40)	1.076 (1.41)	2.938* (4.32)		
Δ <i>RLF</i>		-2.49* (1.66)	-4.47* (1.76)	-1.57 (1.42)		
<i>R</i> ²		0.402	0.380	0.394		

^a Indicates statistical significance at 90% level (*t*-ratios in parentheses).

* Indicates coefficient multiplied by 10³.

Variable definitions:

Δ*Y* = change in per capita state income, previous year

ΔD36 = change in Democratic share of state Presidential vote, 1932 to 1936

ΔD38 = change in Democratic share of state Congressional vote, 1936 to 1938

ΔD40 = change in Democratic share of state Presidential vote, 1936 to 1940

See table 1 for remaining variable definitions. Changes in these variables are taken over the relevant electoral period. For further discussion, see text.

Table 2 presents coefficients from regressions of the change in the Democratic share on the change in income, spending, WPA jobs, relief cases, and the fraction of the state's population living on farms (a variable found to be significant by Kramer and Lepper). While table 2 is clearly not a complete electoral history of these years, nonetheless an interesting narrative emerges.

The clearest implication is that income change was of substantial importance in the elections of 1936 and 1938. The coefficients displayed are for one-year income change only (following Kramer and Lepper), but one obtains similar results (in all three years) for income change over a two-year or a four-year period. This result alone is enough to confirm the relevance of the allocation of aggregate spending. The table also shows, however, that no such effect was visible in 1940.¹³

The evidence of a *direct* effect of government spending in altering voting preferences is far weaker. In 1936 the coefficient of *SPND* is positive and raises R^2 noticeably; but it is not significant at the 90% level. In 1938 and 1940 the effect disappears entirely, and in 1938 the sign is strongly negative. Apparently the main *expenditure* effect worked *through* income, at least in 1936 and 1938.

The same cannot be said for the direct effect of federal employment. In equations (35), (36) and (37), the coefficient of *jobs* is positive in each case, and in 1940 — when income effects become insignificant — the coefficient becomes strongly positive. The coefficients of ΔWRK in 1936 and 1938 are not statistically significant in themselves, but the strong negative effect of ΔRLF indicates a significant indirect impact of work-relief programs, since a major result of these jobs was to reduce relief rolls.¹⁴ All these effects were stronger in states

¹³ Surprisingly the coefficients of ΔF are consistently positive. I have no explanation for this development, but it is undoubtedly related to the peculiar migration patterns of the 1930's.

¹⁴ This effect can be shown by regression of the fall in relief levels from the 1935 peak against income change and work-relief jobs:

$$\begin{aligned} \Delta RLF_{36} &= 0.019 - 0.175\Delta Y_{36} \\ &\quad (0.68) \\ &\quad - 6.735*WRK_{36} \\ &\quad (7.75) \end{aligned}$$

$$R^2 = .572.$$

with high variance in their Presidential vote.

The figures thus show an asymmetry in the rise and fall of the Roosevelt vote. On the way up (1936), the entire country responded to general economic progress, so that income change dominates the voting pattern. But the spending strategy involved heavy expenditure in high-variance states, and when income fell (1937–1938) these were the first to leave the camp, often by dramatic margins. In 1940 income was rising, yet the constant term indicates a large “exogenous” drop-off in Democratic votes. This drop-off was also concentrated in high-variance states. Economic affairs simply did not have much political cutting edge in 1940. The campaign focused on foreign issues, particularly United States involvement in the European war. As Lubell (1951, chapt. 7) has suggested, the percentage of German-Americans in the population (*PGRM*) is the best single explanatory variable

$$\begin{aligned} \Delta D_{40} &= -0.004 + 1.53*\Delta F \\ &\quad (3.60) \\ &\quad - 0.110\Delta Y + 1.78*\Delta WRK \\ &\quad (0.41) \quad (3.19) \\ &\quad - 0.62\Delta RLF - 0.874*PGRM \\ &\quad (0.72) \quad (5.52) \end{aligned}$$

$$R^2 = .660.$$

(28)

The instability of the relationship between income and voting should not be that surprising. It may be true that many voters make a kind of Downsian calculation when they enter the voting booth, but the fundamental fact of life in political-economic analysis is that individual voters do not really get anything for their vote. “Buying” votes through general macro-economic policies is inherently uncertain and impermanent.

In light of this argument, it is most interesting to see that the effect of federal *jobs* comes through most strongly only in 1940, when general economic considerations were irrelevant. When a worker receives his paycheck directly from the government, it appears that his loyalty to the incumbent is more durable. Ironically, the state-allocation of jobs in 1940 was the one case which did not fit the model of vote-maximizing, though it is possible that the changed circumstances of 1940 called forth a different

political strategy which has not been uncovered here. Whatever the basis for the distribution of jobs in 1940, federal workers did not bite the hand that fed them in that year. Roosevelt might well have lost the election without these votes.

REFERENCES

- Arrington, L. J., "The New Deal in the West: A Preliminary Statistical Inquiry," *Pacific Historical Review*, 38 (Aug. 1969), 311-316.
- , "Western Agriculture and the New Deal," *Agricultural History* 44 (Oct. 1970), 337-353.
- Blum, J. M., *Roosevelt and Morgenthau* (Boston: Houghton Mifflin Company, 1970).
- Chandler, L., *America's Greatest Depression: 1929-1941* (New York: Harper and Row, 1970).
- Davis, O. A., M. J. Hinich, and P. Ordeshook, "An Expository Development of a Mathematical Model of the Electoral Process," *American Political Science Review*, 54 (June 1970), 426-448.
- Downs, A., *An Economic Theory of Democracy* (New York: Harper and Brothers, 1957).
- Howard, D. S., *The WPA and Federal Relief Policy* (New York: Russell Sage Foundation, 1943).
- Huzar, E., "Federal Unemployment Relief Policies: The First Decade," *Journal of Politics*, 2 (1940), 321-335.
- Key, V. O. Jr., *The Administration of Federal Grants to States* (Chicago: Public Administration Service, 1937).
- Kramer, G. H., "A Decision-Theoretic Analysis of a Problem in Political Campaigning," in *Mathematical Applications in Political Science II*, Joseph L. Bernd (ed.) (Dallas: Southern Methodist University Press, 1966).
- , "The Effects of Precinct-Level Canvassing on Voter Behavior," *Public Opinion Quarterly*, 34 (Winter 1970-1971), 560-572.
- , "Short-term Fluctuations in U.S. Voting Behavior 1896-1964," *American Political Science Review*, 65 (Mar. 1971), 131-143.
- Kramer, G. H., and S. J. Lepper, "Congressional Elections," in *Dimensions of Quantitative Research in History*, William O. Aydelotte, Allan G. Bogue, and Robert W. Fogel (eds.) (forthcoming).
- Lepper, S. J., "Voting Behavior and Aggregate Policy Targets," Cowles Foundation Discussion Paper no. 341, Yale University (May 23, 1972).
- Lubell, S., *The Future of American Politics* (New York: Harper and Row, 1951).
- MacMahon, A. W., J. D. Millett, and G. Ogden, *The Administration of Federal Work Relief* (Chicago: Public Administration Service, 1941).
- Mann, I., and L. S. Shapley, "The A Priori Voting Strength of the Electoral College," in *Game Theory and Related Approaches to Social Behavior*, Martin Shubik (ed.) (New York: John Wiley and Sons, 1964).
- Maxwell, J. A., *The Fiscal Impact of Federalism in the United States* (Cambridge: Harvard University Press, 1946).
- Patterson, J. T., *Congressional Conservatism and the New Deal* (Lexington: University of Kentucky Press, 1967).
- , *The New Deal and the States* (Princeton: Princeton University Press, 1969).
- Reading, D., "A Statistical Analysis of New Deal Economic Programs in the Forty-Eight States, 1933-39" (unpublished dissertation, Utah State University, 1972).
- Riker, W. H., *The Theory of Political Coalitions* (New Haven: Yale University Press, 1962).
- Shapley, L. S., and M. Shubik, "A Method for Evaluating the Distribution of Power in a Committee System," *American Political Science Review*, 48 (1954), 787-792.
- United States Federal Works Agency. *Final Report on the WPA Program, 1935-1943* (Washington: U.S. Government Printing Office, 1943).