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USING AGGREGATE VOTING DATA TO MEASURE
PRESIDENTIAL COAT-TAILS EFFECTS*

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ABSTRACT

This paper presents a method measuring Presidential coat-tail effects on Senate races by using aggregate voting data. The measurement is based on the assumption that in each state, there is a certain fairly stable percentage which constitutes the normal vote for each party. The coat-tail measurement, which we call the C-correlation, is the state by state correlation between that part of the Presidential vote not attributable to party loyalty and that part of the Senate vote also not attributable to party loyalty. The C-correlations were computed for a sample of states for the 1956, 1960 and 1964 elections. The elections of 1956 and 1964 produce large and highly significant C-correlations indicating the clear presence of coat-tail effects. Interestingly, the C-correlation for 1956 is higher than for 1964. The C-correlation for 1960 was near zero.

Both practitioners and analysts of electoral politics believe that coat-tail effects play an important role in determining the outcome of congressional elections.^{1/} Yet, as Miller^{2/} clearly shows, it is very difficult to use aggregate voting data to assess the importance of these presumed coat-tail effects. If, for example, the President runs well ahead of his party, as did Eisenhower in 1956, the large gap between the President and his party may be taken to indicate the absence of a coat-tail effect. If on the other hand, the President's party runs as well as he does this can be taken to mean that the President is no more popular than his party and there is once again no coat-tail effect.

In this paper, I will present an attempt at doing what Miller said could not be done--I will present a method of analyzing aggregate voting data to determine the existence of and strength of Presidential coat-tail effects on Senatorial contests. This method will then be applied to the elections of 1956, 1960 and 1964. The 1968 election was excluded because of the complications resulting from the third party candidacy of George Wallace.

The measurement I am proposing is based on the following assumptions and definitions. We can regard the outcome of an election as being determined by two kinds of factors. One is the normal party identification of the voters (which we shall call N). Converse^{3/} has shown that this remains fairly constant over time. The other kinds of factors are short term forces and

include such things as the personal attractiveness of the candidates and short term fluctuations in the popularity of a party or administration.

Miller^{4/} defined a coat-tail influenced vote for Congress as a vote in which the Congressional vote decision (as well as the Presidential) is motivated by the appeal of the Presidential candidate. Since the personal appeal of candidates is a factor in the short term forces, applying Miller's definition to the situation at hand has the following implications. If the short-term forces associated with the Presidential contest influenced the Senatorial contests, we should find that where a Presidential candidate received many votes attributable to short term forces (not to stable party loyalty) the Senatorial candidate of his party should have also received many votes attributable to short term forces. Analogously, where the Presidential candidate received few votes attributable to short term forces, the Senatorial candidates of his party should likewise have received few such votes. This suggests that our measurement of coat-tail effects be some measure of association between that part of the Presidential vote attributable to short term forces and that part of the Senatorial vote also attributable to short-term forces.

To simply do a state by state correlation of the vote percentages received by Presidential and Senatorial candidates of the same party would however be to miss the whole point of the definition of coat-tail effect. A large part of

the vote in each state is determined by stable party loyalty rather than short-term forces. Since the N's of the different states vary greatly, regardless of the existence of coat-tail effects we would expect such a correlation to be quite high, reflecting the different N's of the different states and masking the effects of short term forces. Hence, a correlation which controls for the different N's of the different states will be introduced.

Let P be the percentage of the total Presidential vote cast in a state which was received by the Democratic candidate for President. Let S be the percentage of the total vote cast for Senator which was received by the Democratic Senatorial candidate in a state. Our measurement of the coat-tail effect of a given election is the state by state correlation between $P - N$ and $S - N$.

We now want to operationalize N. Converse^{5/} measures N with survey data. I will measure it with aggregate voting data. Since Converse has shown N to have been quite stable nationally between 1954 and 1964, we will assume that it was stable in each state. Hence we will take N for each state to be the average of the Democratic percentage of the total Congressional vote (in all districts--excluding at large races) for 1954 and 1962. This quantity we shall call C.

We now have three questions to answer.

- (1) Why do we think Congressional elections provide a good basis for measuring N?

(2) Why are we using only off-year elections?

(3) Why are we excluding 1958?

I have two reasons for believing that Congressional elections provide a good measure of party loyalty. (a) Most people vote for Congress on the basis of party rather than personality.^{6/} (b) Where there are more than a very small number of Congressmen in a state, the effects of personal appeal (or other short term forces relevant to a specific race) should average out so as not to be a significant factor in the state wide percentage for each party.

We do not use Congressional elections in Presidential years in measuring N because, if there are coat-tail effects from the Presidential election these would then influence our measurement of N. While off year Gubernatorial and/or Senatorial elections might also influence the Congressional vote in a state, we assume that the lesser saliency of these offices would result in smaller coat-tail effects.

Both election data and accounts of the 1958 elections make me wary about using the results of that election in computing N. In that election, the Democrats rolled to a huge victory doing much better than in either of the other off-year elections. The country had a Republican President and was in the midst of a substantial recession at the time of the election. Moreover, in certain states the Republicans added to the short-term anti-Republican forces by their support of "right-to-work" laws.

Having defined my measure, I now wish to demonstrate its use. The following hypothetical examples will help to illustrate the difference between using the correlation between P and S on the one hand, and my "C-correlation" on the other hand (The C in C-correlation stands for both coat-tail and Congressional).

Table 1 about here

In all of the above examples both the Pearson correlations and the Spearman (rank-order) correlations between P and S are +1. The C-correlations however, tell quite a different tale. In example 1, the C-correlation is +1, in example 2, -1, and in example 3, it is zero.

These C-correlations are consistent with my conceptualization of what a coat-tail effect is and isn't. We would not want to infer from example 3 that there is a coat-tail effect since the Senatorial vote in each state is directly attributable to normal party loyalty. A negative C-correlation such as in example 2, suggests a negative coat-tail effect as might occur if there were great animosity between the Presidential and Senatorial candidates. Only example 1 is consistent with my conception of a coat-tail effect.

For the elections under consideration (1956, 1960 and 1964) C-correlations were computed for a sample of states. The states in the sample were chosen as follows. Because they are usually highly competitive, because they contain many congressional districts and because I was interested in them, I favored the big states in my sample. Because

Table 1. Hypothetical results used to illustrate C-correlation.

(% Democratic)			
	<u>C</u>	<u>P</u>	<u>S</u>
(1) State A	40	45	45
State B	60	55	55
(2) State A	40	45	35
State B	60	55	65
(3) State A	40	45	40
State B	60	55	60

they did not have fully developed two party systems and because Democratic Senatorial candidates from the region frequently dissociated themselves from the national ticket, I excluded the states of the old Confederacy. States with only one Congressional district were also excluded. Beyond this the rest of the sampling procedure systematically attempted to represent the range of partisan leanings, from strongly Democratic to strongly Republican. Due to sampling procedures, the farm belt and mountain states are somewhat under represented.

The data and the C-correlations are given in the tables following.

Discussion of Results

The results indicate very decided coat-tail effects for the 1956 and 1964 elections and a slight negative result for 1960. These results are partially consistent and partially inconsistent with other knowledge and beliefs about coat-tail effects. The fact that the C-correlation for 1960 is the smallest is consistent with what seems to be a commonly held belief that coat-tail effects are most pronounced when the head of the ticket is extremely popular and wins by a landslide.

Tables 2, 3a, 3b, 3c about here

On the other hand, while Campbell and Miller^{7/} use survey data to demonstrate the existence of a coat-tail effect for

Table 2. Congressional Voting Data (Used to Calculate C)

State	% Democrat of total Congressional vote in all Congressional Districts--does not include at-large contests		
	1954	1962	Average = C
California	51.5	51.9	51.7
Colorado	49.8	47.5	48.9
Connecticut	48.8	53.8	51.3
Illinois	50.2	50.2	50.2
Iowa	41.5	46.1	43.8
Maine	45.4	44.7	45.1
Massachusetts	53.1	55.3	54.2
Michigan	52.0	51.5	51.8
Missouri	56.2	56.3	56.3
Minnesota	52.9	49.7	51.3
Montana	52.3	48.1	50.4
Nebraska	38.4	36.9	37.7
New Jersey	48.2	50.1	50.1
New York **	49.0	50.4	49.7
Ohio	44.7	43.9	44.3
Oregon	45.6	54.2	49.9
Pennsylvania	50.7	49.0	49.8
South Dakota	40.8	39.9	40.4
Rhode Island	59.8	68.1	64.0
Washington	43.4	38.4	40.9
West Virginia	57.4	56.0	56.7

All election data presented in this paper are taken from:

- a) Scammon, Richard M. (ed.) America Votes. Governmental Affairs Institute, 1956-57, 1960, 1964.
- b) Statistics of the Presidential and Congressional Elections. U.S. Government Printing Office.

Table 2 cont'd

** In New York, votes cast for the Democratic candidate on another party line (usually Liberal) are counted as part of the Democratic vote. Votes on any line which were for candidates not also on the Democratic line were counted as part of the total vote but not as part of the Democratic vote.

Table 3A. 1956 Election

State	% Democratic		
	Presidential 1956 P	Senatorial 1956 S	Incumbency I*
California	44.3	45.6	-1
Colorado	39.9	51.3	0
Connecticut	36.3	43.0	-1
Illinois	40.3	45.7	-1
Iowa	40.7	46.1	-1
Missouri	50.1	56.4	+1
New York **	38.7	46.7	0
Ohio	38.9	52.9	-1
Oregon	44.7	54.2	+1
Pennsylvania	43.3	50.1	-1
South Dakota	41.6	49.2	-1
Washington	45.4	61.1	+1

C correlation = .89

* For explanation of I see Page 12.

**In New York, votes cast for the Democratic candidate on another party line (usually Liberal) are counted as part of the Democratic vote. Votes on any line which were for candidates not also on the Democratic line were counted as part of the total vote but not as part of the Democratic vote.

Table 3B. 1960 Election

	<u>Presidential 1960</u>	<u>Senatorial 1960</u>	<u>Incumbency*</u>
Colorado	44.9	45.8	-1
Illinois	50.0	54.7	+1
Iowa	43.2	48.1	0
Maine	43.0	38.4	-1
Massachusetts	60.2	43.5	-1
Michigan	50.9	51.7	+1
Minnesota	50.6	57.5	+1
Missouri	50.3	53.1	+1/2
Montana	48.6	50.7	0
Nebraska	37.9	41.1	-1
New Jersey	50.0	43.2	-1
Oregon	47.3	54.5	0
Rhode Island	63.6	68.9	0
South Dakota	41.8	47.6	-1
West Virginia	52.7	55.3	+1

C Correlation = -.115

* For explanation of I see Page 12.

Table 3C. 1964 Election

<u>State</u>	<u>% Democratic</u>		<u>Incumbency</u> I*
	<u>Presidential 1964</u> P	<u>Senatorial 1964</u> S	
California	59.1	48.5	+ 1/2
Connecticut	67.8	64.6	+1
Massachusetts	76.2	74.3	+1
Maine	68.8	66.6	+1
Michigan	66.7	64.4	+1
Minnesota	63.8	60.5	+1
Montana	58.9	64.5	+1
Nebraska	52.6	38.6	-1
New Jersey	65.6	61.9	+1
New York**	68.6	53.5	-1
Ohio	62.9	50.2	+1
Pennsylvania	64.9	49.1	-1
Rhode Island	80.9	82.7	+1
Washington	62.0	72.2	+1
West Virginia	67.9	67.7	+1

Correlation = .66

** In New York, votes cast for the Democratic candidate on another party line (usually Liberal) are counted as part of the Democratic vote. Votes on any line which were for candidates not also on the Democratic line were counted as part of the total vote but not as part of the Democratic vote.

* For explanation of I see Page 12.

1956, it is nonetheless surprising to find that we have a larger C-correlation for 1956 than for 1964. In 1956 Eisenhower won by a landslide while the Republicans won neither house of Congress, whereas in 1964, huge Congressional majorities were swept in with Johnson. In answer to writers such as Meyer^{8/} who hold the view that Eisenhower did not have coat-tails, I would say that our results indicate the following. Almost everywhere, Eisenhower was more popular than his party, but where the short term forces for Eisenhower were strongest, Republican Senatorial candidates also did best. To put it another way, in all states in our sample, it seems that many more independent voters and weak party identifiers voted for Eisenhower than for the Republican candidate for the Senate. On the other hand, the more such voters who voted for Eisenhower, the more such voters voted Republican for Senator.

Since I have justified the claim that the high C-correlation for 1956 indicates a clear coat-tail effect, I should explain why it is reasonable for us to have gotten a lower C-correlation for 1964. Perhaps we can do this best by considering an extreme case, which is like 1964 in that both the Democratic candidate for President and most Democratic candidates for Senate do considerably better than the normal vote for each state but where the C-correlation is near zero or even negative.

Such a result would be explained in the following ways.

(a) Many of these individual Senatorial races generated their own short-term forces--i.e. the Democrats had attractive Senatorial candidates in most states, or (b) there were widespread pro-Democratic short-term forces which were independent of the appeal of the Democratic Presidential candidate--if these forces had been dependent on the President, they would have had the strongest effect on Senatorial contests where the short-term forces for the President were strongest.

In neither of the above two possibilities is the explanation consistent with our definition of coat-tail effects. Hence, just as the fact that Eisenhower did much better than other candidates of his party does not prove the absence of a coat-tail effect so the fact that a President and Senatorial candidates of his party may win quite handsomely does not in itself prove the existence of coat-tails.

While I believe the preceding arguments have helped to justify the use of the C-correlation as a measurement of whether Presidential coat-tails influence Senatorial contests, situations such as 1956 indicate an important drawback of this measurement. It does not measure how much difference the Presidential contest made in the outcome of the average Senate race or of any individual Senate race.

Having seen and interpreted these correlations, we have two further questions. 1) Are these correlations

significant? In other words, did we get these correlations because there is some basis for inferring a causal relationship between P-N and S-N or simply because the states in which a Presidential candidate does well also happen to have appealing Senatorial candidates of the same party? 2) If these correlations are significant, then which way does the causal relationship work? Is it the Presidential race which influences the Senatorial or vice versa, or is it both ways?

To answer the second question first, contingency data such as we have can never tell us the direction of causation. On the other hand it is a common conviction among political scientists that by far the most salient election in a Presidential year is the Presidential election. If true, this would strongly suggest that the major direction of causation should be the Presidential race influencing the others.

But how can we reconcile saying that the President pulls the Senators on his coat-tails with situations such as President Johnson winning Washington with 62.0% of the vote while Senator Jackson was being re-elected with 72.2% of the state's vote? We have two answers. 1) Perhaps if Johnson had done better in that state then Jackson would have also done better and if Johnson had done worse then Jackson would have also done worse. 2) The existence of a general coat-tail effect for an election

does not require that such an effect influence the outcomes of all contests on that election day.

We now try to answer the question of significance. We do this by imagining that in all states, Senatorial candidates are randomly selected from a large population of potential candidates, whose personal appeals are normally distributed. If we regard the outcome of each Senate contest as being a function of the difference in the popularity of the two candidates (it is also a function of the states' N and the popularity of the Presidential candidates) then these outcomes should also be normally distributed. Assuming the selection process described above, we can now ask, what the true correlation ρ variables P-C and S-C must be to give us our experimentally determined C-correlations.

Using the Fischer Test gives us the following 95% confidence intervals for the true correlations:

<u>1956</u>	.65 $< \rho <$.97
<u>1960</u>	-.38 $< \rho <$.18
<u>1964</u>	.22 $< \rho <$.88

The above results indicate that the C-correlations for 1956 and 1964 are indeed significantly different from zero. Therefore the positive associations between P-C and S-C for those years are not chance events. We also see that the result for 1960 is not significantly different from zero. Since there may be some question as to whether the distributions of P-C and S-C are bivariate normal and whether we have

a sufficient number of states in our sample to use the Fischer test, the confidence intervals above may not be valid. To answer any such objections I have done an alternate test which makes no questionable assumptions about sample size or distribution. I have computed the Spearman rank order correlations between P-C and S-C and have done significance tests based on these correlations. The Spearman correlations and the significance level at which they are different from zero are given below.

1956	r_{C_S}	=	.90	$p < .01$
1960	r_{C_S}	=	.04	$p > .10$
1964	r_{C_S}	=	.66	$p < .01$

Considerations of Incumbency

While there is little questionable about the significance tests based on the Spearman correlation (about the only questionable thing I can think of is the fact that the sample was not completely random) there may still be some nagging feeling that the results are spurious. In particular, since incumbent Senators seeking re-election are believed to do better than non-incumbents, it might be thought that our results stem from the presence of popular incumbents of the President's party in states where the President is also personally popular. One way of checking this out is to take the C-correlations controlling

for incumbency. Recalling that

$$r_{12.3} = \frac{r_{12} - r_{13} r_{23}}{(1 - r_{13}^2)(1 - r_{23}^2)}$$

we proceed to calculate the necessary correlations. We let variable 1 be P-C, 2 be S-C and 3 be the incumbency variable I. In calculating r_{13} and r_{23} we assign values of I as follows. A previously elected Democratic incumbent gets a score of +1. A Democratic incumbent appointed to fill out a term but having never been elected in his own right gets +1/2. If neither is an incumbent, we assign zero to the contest. Republican incumbents are given analogous negative scores. The data from these calculations are given below in Table 4.

Table 4 about here

The above correlations yield several noteworthy results.

(a) As both an impressionistic look at our data and conventional wisdom led us to suspect, there are clear positive correlations (r_{23}) between incumbency and the Senate vote attributable to short term forces.

(b) The value of the partial correlation $r_{12.3}$ for 1960 strongly suggests that the election was characterized by the absence of a coat-tail effect rather than by the slight though not statistically significant negative effect shown by the uncontrolled C-correlation.

(c) For both 1956 and 1964, the strong positive correlations between P-C and S-C are clearly not attributable

Table 4. Intercorrelations involving Incumbency

1956	$r_{12} (= r_c) = .89$	$r_{13} = .30$	$r_{23} = .41$	$r_{12.3} = .89$
1960	$r_{12} = -.115$	$r_{13} = -.38$	$r_{23} = .38$	$r_{12.3} = .03$
1964	$r_{12} = .66$	$r_{13} = .38$	$r_{23} = .62$	$r_{12.3} = .58$

to the effects of incumbency. This is particularly significant because of the clear positive correlations between I and S-C. The fact that the values of r_{23} are positive indicates that incumbency can be used as a measure (albeit a very imperfect one) of the relative popularity of Senatorial candidates. Moreover it is a measurement which is independent of the effects of the Presidential race. Hence in our partial correlations we are in some real sense controlling for the effects of personal appeal in Senate races. The fact that this does little to the correlation between P-C and S-C is further evidence that our C-correlations were neither chance events nor caused by the intervening variable of incumbency.

FOOTNOTES

1. C. Press, "Voting statistics and presidential coat-tails," American Political Science Review 52 (December, 1958): 1041-1050 and Malcolm Moos, "Politics, Presidents and Coattails," Baltimore: Johns Hopkins Press, 1952.
2. Warren Miller, "Presidential Coattails -- Myth and Methodology," Public Opinion Quarterly 19 (Winter 1955-56): 353-368.
3. Philip Converse, "The Concept of a Normal Vote," in Angus Campbell, Philip Converse, Warren Miller and Donald Stokes (eds.), P. 13, Elections and the Political Order, New York: John Wiley, 1966.
4. Miller, op. cit.
5. Converse, op. cit.
6. John W. Meyer, "A Reformulation of the 'Coattails' Problem," in William McPhee and William Glaser, Public Opinion and Congressional Elections. New York: Free Press, 1962, p. 58.
7. Angus Campbell and Warren Miller, "The motivational basis of straight and split ticket voting," American Political Science Review 51 (June, 1957): P. 293-312.
8. Meyer, op. cit.