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## Economic Interpretation of the History of Congressional Voting in the Twentieth Century

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CENTER FOR THE STUDY OF THE ECONOMY AND THE STATE

WORKING PAPER SERIES

AN ECONOMIC INTERPRETATION OF THE  
HISTORY OF CONGRESSIONAL VOTING  
IN THE TWENTIETH CENTURY

Sam Peltzman

Working Paper No. 028

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CENTER FOR THE STUDY OF THE ECONOMY AND THE STATE

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## **An Economic Interpretation of the History of Congressional Voting in the Twentieth Century**

Sam Peltzman

This paper interprets historical change in Congressional voting patterns in terms of the simplest principal-agent model: I will show that profound changes in Congressional voting patterns over the course of the twentieth century can be traced mainly to corresponding changes in the economic interests of their constituents. This claim may appear, at once, modest and extravagant. Modest, because the notion that principals by and large serve their agents' interests is so familiar in non-political contexts. Extravagant, because economists have found the notion difficult to apply to the behavior of political agents. I begin by outlining the empirical source of this difficulty. Then I describe the main trends in twentieth century economic history and Congressional voting behavior which are the focus of subsequent empirical analysis. That analysis reveals a much closer connection between economic and political history than would be suggested by much contemporary empirical literature on the economics of voting. I conclude by attempting to reconcile these divergent results.

### **I. The Questionable Connection between Congressmen and their Constituents**

Economists have adduced a variety of explanations for why Congressmen might rationally choose not to vote consistently for the interests of a majority of constituents (see, e.g., Downs, 1957, Buchanan and Tullock, 1962, Stigler, 1971). More recently, some claim to have shown that, in fact,

majority interests are a poor predictor of Congressional voting patterns (Kau and Rubin, 1979, 81, Kalt, 1981, Mitchell, 1978). I will not review this theoretical and empirical literature here. Instead, since my own focus is empirical, I attempt, in Table 1, to provide the general reader with a sense of the difficulty in linking empirically the behavior of Congressmen to the broad interests of their constituents.

The top panel (A) of this table summarizes some characteristics of the gainers and losers from federal tax-spending policy. The state is the unit of analysis, and the dependent variables are scaled so that higher values imply more "net benefits" (or lower taxes) per capita from federal programs. Line A.1 seeks to explain the ratio of federal spending in a state to the tax burden on the state's citizens, while line A.2 uses only actual personal income and payroll taxes collected. Neither measure is perfect,<sup>1</sup> but both tell a roughly similar story when they are regressed on some state economic characteristics. (The particular characteristics--income, urbanization and the state's industrial mix--are chosen pragmatically: They can explain these data fairly well, and they are readily available for the much longer historical period which is this paper's main concern.) They say that the federal budget tends to redistribute wealth away from states with high incomes and large manufacturing sectors, and that income is the more important of the two variables. Urbanization has a less clear-cut effect. City dwellers pay more taxes (line A.2.a.), but perhaps those who dwell in small cities (i.e., outside SMSAs) receive net benefits (line A.1.b).

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<sup>1</sup>Both numerator and denominator of A.1 are estimates based on sometimes arbitrary assumptions--e.g., that the burden of the deficit is proportional to taxes paid. Apart from its neglect of benefits, some of the taxes attributed to a state in A.2 are in fact paid by residents of another.

**Notes to Table 1:**  
Dependent Variables

1. SPEND/TAX: Estimate of Federal Government Expenditures in a State/Estimate of Federal tax burden in the State. The tax "burden" includes allocation of various non-personal taxes (e.g., corporation income taxes) to citizens of each state. Average for 1975, 76, 79  $\times$  100.

2. (1 - TAX): One minus ratio of Internal Revenue collections from individual income and payroll taxes in each state to total personal income in the state. (Taxes may be collected in one state from residents in another). Average for 1977-79  $\times$  100.

3. NTUA: 100-average rating by National Taxpayer's Union (NTU) of Senators from state for 1979-80. The NTU rating is the percentage of a Senator's votes which favored reduced taxes or spending or which opposed increases, so higher values of NTUA imply more support for taxes/expenditures. The NTU uses all votes on tax-spending issues to construct its index.

4. ADA: Average rating by Americans for Democratic Action (ADA) of Senators from a state for 1979-80. ADA rating is percentage of times a Senator votes for the ADA position on a selected sample of 20 issues. ADA counts absence or abstention as opposition; I recalculated the ADA rating by ignoring these non-votes.

Sources: SPEND/TAX, 1 - Tax: Statistical Abstract of the U.S. NTUA and ADA from data supplied by NTU and ADA respectively.

Independent Variables

1. HH INC: Median Household Income in state (thousands), 1975

2. MFG: Percent of Non-agricultural labor force in manufacturing, 1978

3. URB: Percent of state population in urban areas, 1970

4. METRO: Percent of state population in standard metropolitan  
statistical areas, 1978

5, 6. See above

7. DEMS: Number of Democrat Senators from State/2, 1979-80.

Source: Statistical Abstract of the U.S.

t -- ratios are below coefficients.

Now look at Panel B, which describes voting patterns in the Senate. The dependent variables here, like those in A., are scaled so that higher values imply more support for federal taxing and spending. Again, despite their imperfections<sup>2</sup>, both measures tell a similar story: apart from the tendency for Democrats to vote for more spending--taxes (col. 7),<sup>3</sup> there is either no connection or a perverse connection between the interests of constituents and the votes of their Senators. For example, holding party constant, pro-tax/spending voting is either uncorrelated (line B.1.a) or negatively correlated (B.1.b, B.2.a, B.2.b.) with the direction of benefits from those policies. Further, the characteristics most clearly negatively correlated with net spending benefits--income and manufacturing--are either uncorrelated (B.1.c.) or positively correlated (B.2.c) with voting for larger federal spending.

The results in Table 1 are only a suggestive introduction to the empirical literature on Congressional voting.<sup>4</sup> But I believe that a reader

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<sup>2</sup>One, NTUA, is derived from an unweighted count of a Senator's votes for increased spending or taxes on all roll-calls dealing with taxing and spending. Thus, a vote to increase total taxes is weighted the same as a vote to increase the budget of the Battle Monuments Commission. The other, ADA, is derived from votes for the Americans for Democratic Action position on a selected sample of 20 issues deemed "important" by that organization. These issues are not limited to tax-spending matters, as with NTUA. However, they will usually include the more important tax-spending issues in a Congress, since the ADA has traditionally favored expansion of federal spending, especially on domestic programs.

<sup>3</sup>I have shown elsewhere (Peltzman, 1982) that in popular elections Democrats tend to draw votes from lower income voters. Thus, since federal tax-spending policy appears "progressive", the tendency for Democrats to be pro-spending/taxing is consistent with a simple principal-agent story.

<sup>4</sup>To illustrate just one problem with these results, note that even if the total impact of the federal budget is progressive, this need not be true of the additions to the budget at issue in Congressional votes in 1980. Hence it is not necessarily true that a positive correlation between "pro-spending" votes and income is "perverse" from the standpoint of the economic interests of constituents.

will find Table 1 consistent with an important broad conclusion of that literature, namely that there is a large "inertial" component in Congressional voting: "liberal" or "conservative" voting patterns tend to persist from issue-to-issue whether or not they seem consistent with constituent interests.

My task here will be to see if this sort of inertia is evident in a much longer historical perspective: Have changes in economic circumstances had any substantial connection with changes in Congressional voting patterns? Is the nature of any such connection "perverse" or is there a consistency between changed voting patterns and changed economic interests? I have two main motives in pursuing these questions. One is simply to add a historical dimension to a literature which tends to focus on one issue or one period at a time. This should tell us whether the "perversity" and "inertia" is just a recent anomaly or the main problem in the economic analysis of legislation. My second motive is to disentangle the economic analysis of legislation from some of the idiosyncrasy of American history. There is a clear regional pattern to the "inertia" in recent Congressional voting: Southern congressmen, e.g., tend to be more "conservative" than northerners (Kau and Rubin, 1979). Per capita income in the South is also lower than the North. If "economic interest" is supposed to be all that matters, this simple correlation appears perverse. But it can be consonant with a world in which "economic interest" is either important or unimportant. There is a long American history of regional political division, as well as of regional economic differences and any cross-section correlation between, e.g., income and "liberal" voting will reflect a mix of historical and economic forces. If that correlation is positive, it could imply that "economic interest" and

"other factors" (like the legacy of the Civil War) tug in opposing directions, or that economic interest matters little next to "history", or that history matters little and political redistribution is merely a "normal" consumer good.

I will use an extremely simple methodology to gauge the impact of economic forces on Congressional voting: 1) I will develop a measure of the voting tendencies of Congressmen in each of several congresses which span the bulk of the twentieth century. This measure, described more fully later, will be akin to an ADA rating, but it is replicable. For simplicity I will speak of "liberal" or "conservative" voting tendencies. 2) The measure will be averaged across states or regions and regressed on some state or regional economic characteristics which are a) available for the same span of time and b) have some plausible connection to the economic interest of those states or regions in liberal or conservative policies. I want to use the regressions to distinguish among three characterizations of 20th Century history of Congressional voting: 1) economic differences among states or regions are alone sufficient to rationalize the bulk of differences in state or regional voting patterns (and the direction of the effect of economic forces is "plausible"); 2) differences in voting patterns mainly persist in spite of changed economic circumstances; 3) economic forces importantly modify otherwise persistent differences in voting patterns. I conclude that the third characterization is the most accurate. But a more important conclusion is that the economic forces have been so powerful as to not only modify, but in many cases to reverse old voting patterns decisively.



## II. The Historical Background

One fact dominates 20th century American economic history, or at least that part of it which is relevant to this paper: States and regions have become and continue to become economically more homogeneous. Figure 1 illustrates this for three characteristics.<sup>5</sup> The solid lines, which track dispersion across states, begin turning down c. 1920 or earlier, and by 1980, have fallen by about 25 per cent (urbanization) to about 70 per cent (income) from their peak values. These movements are closely paralleled when states are grouped into the 9 census regions (broken lines). The generally small vertical distances between these roughly parallel lines imply that the homogenization process has been mainly a regional phenomenon.

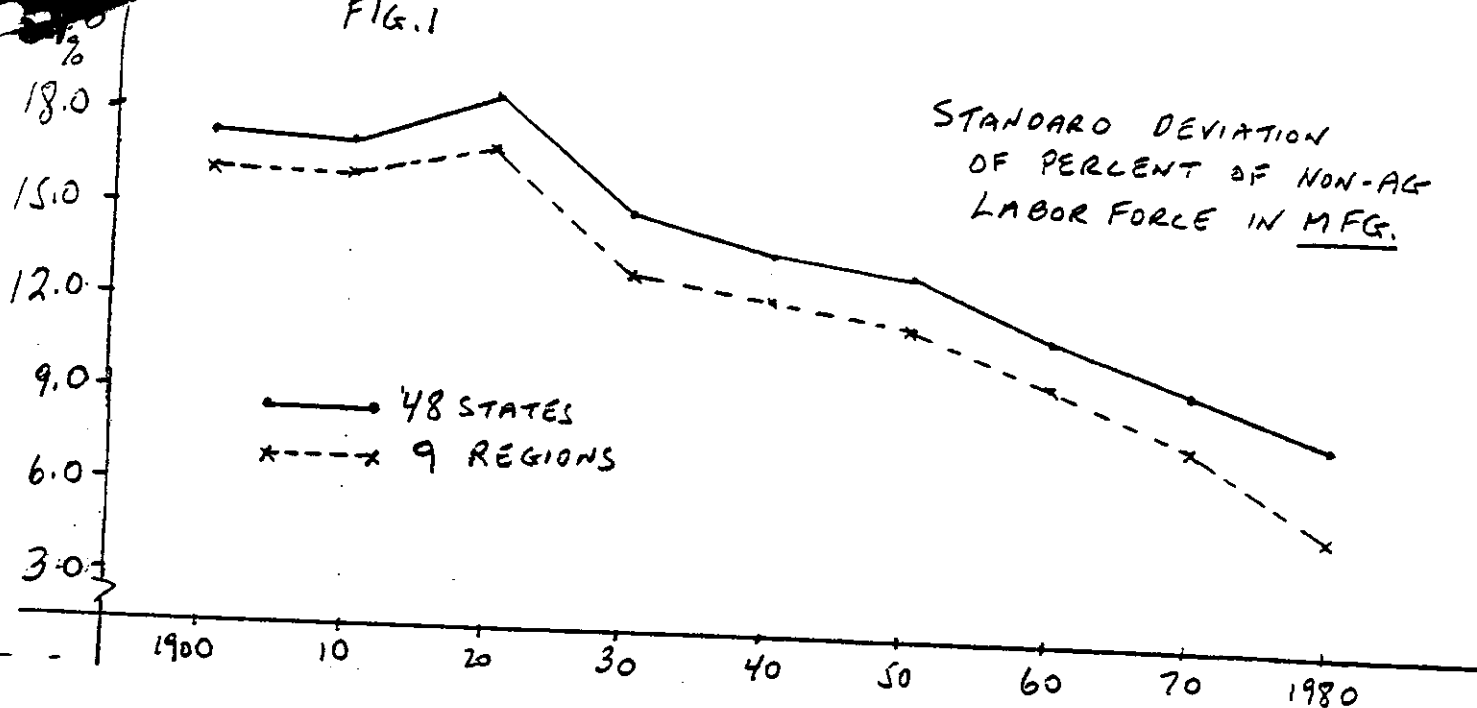
Any economic explanation of Congressional voting has to come to grips with this profound narrowing of economic differences and, presumably, of economic interests. Such an explanation would seem to imply a similar narrowing of political differences across states and regions. But the crude data belie such similarity. Figure 2 portrays the history of a few measures of political difference across states and regions. The top panels, focus on party membership in Congress. Any detectable narrowing of sectional differences seems confined to the most recent two decades or so, or 30 years after the onset of the economic homogenization. In addition, there is much more intra-regional variability in party membership than in the economic data. Of course, the American parties can each accommodate a wide spectrum of political belief, so party membership may be too crude a measure of political difference. Accordingly, the bottom panels of Figure 2 focus on voting behavior. The underlying data come from successive samples of 25 votes on

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<sup>5</sup>See note to Table 3 for explanation and sources of these variables.

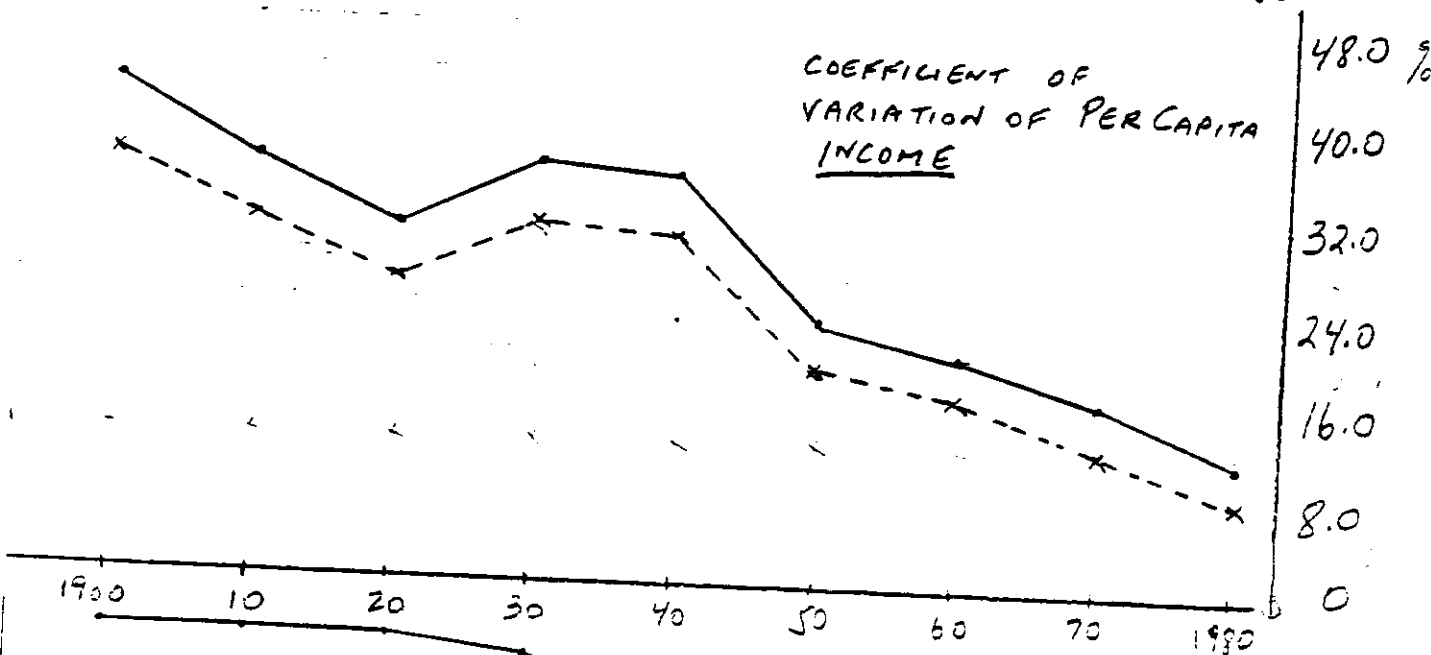
FIG. 1

STANDARD DEVIATION  
OF PERCENT OF NON-AG  
LABOR FORCE IN MFG.



COEFFICIENT OF  
VARIATION OF PER CAPITA  
INCOME

48.0 %  
40.0  
32.0  
24.0  
16.0  
8.0  
0



STANDARD DEVIATION  
OF PERCENT OF POPULATION  
IN URBAN AREAS

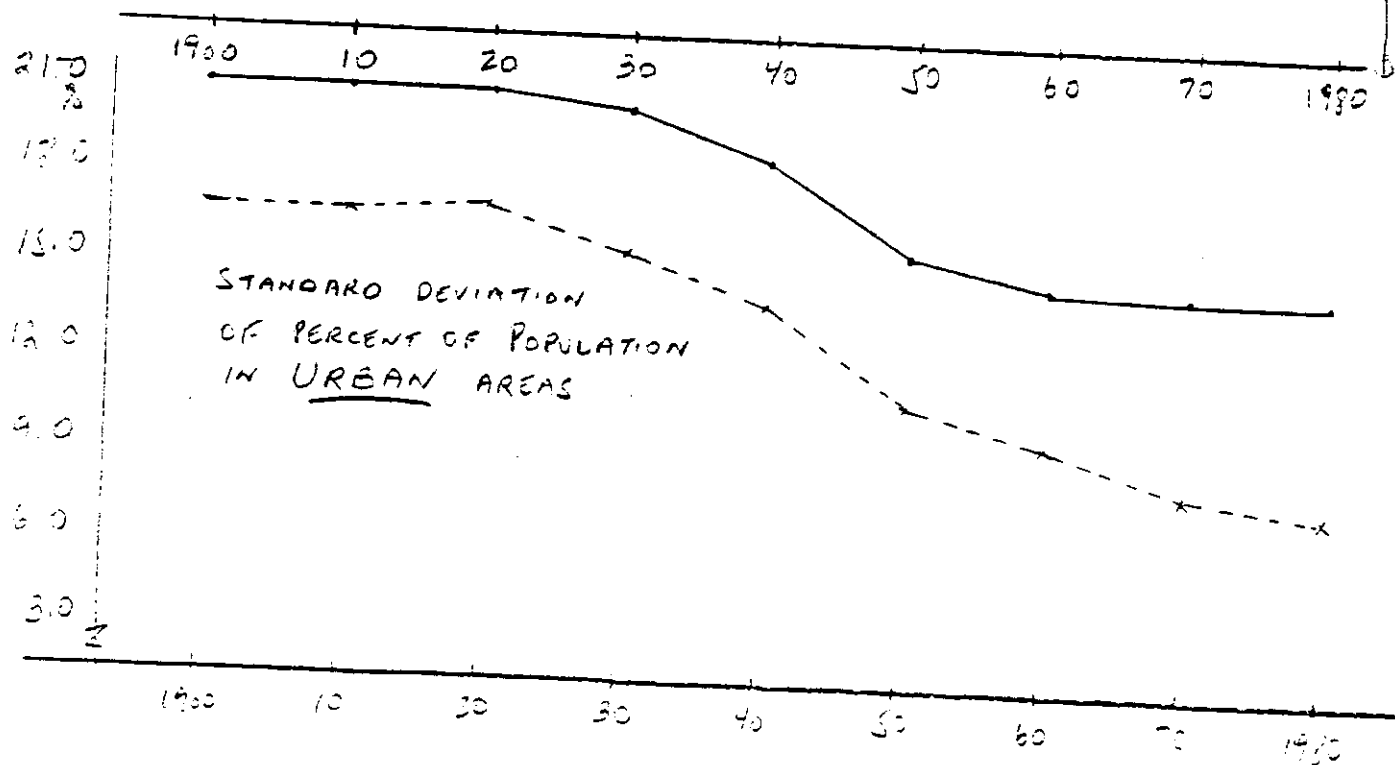
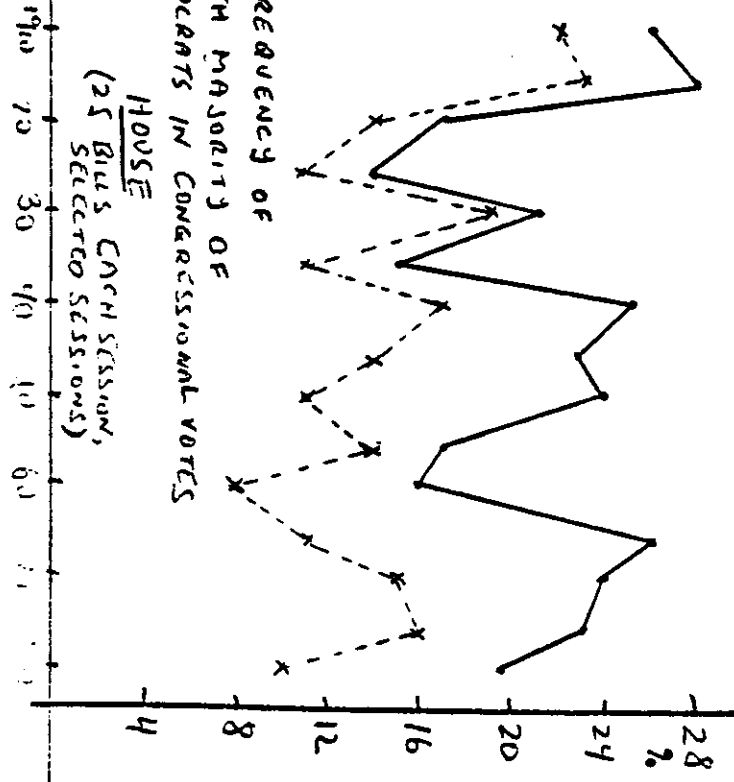
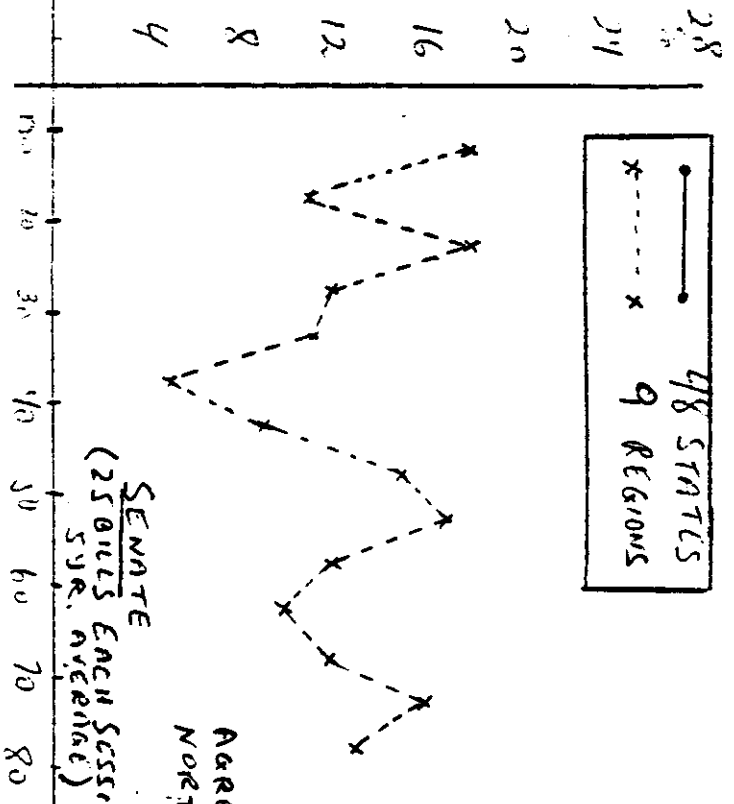
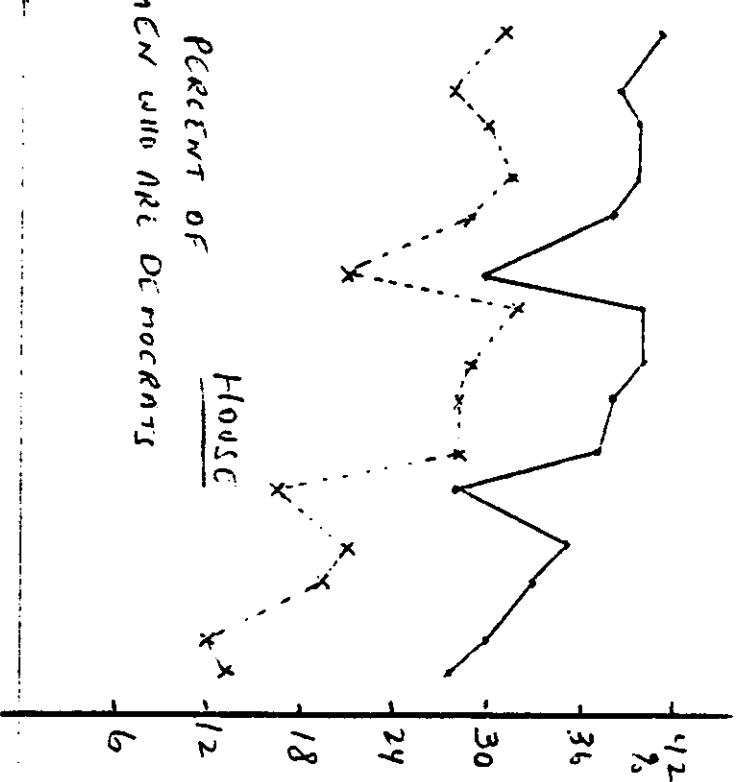
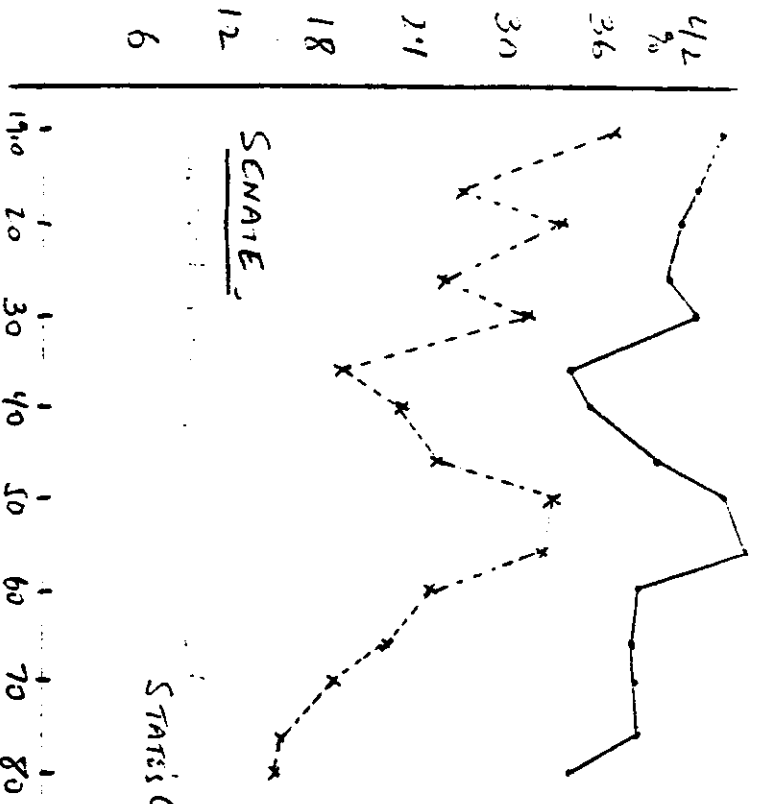


fig. 2



"economic" issues taken in a Session of each House. For each vote, I first ascertained the position taken by the majority of Northern Democrats. Then, for each session, I computed the average frequency with which a state's or region's Congressmen voted with the Northern Democrat majority on the 25 bills. (The sample and the voting variable are described more fully in the next section). Time series of the standard deviation of these frequencies across states and regions are portrayed in the bottom panel of Figure 2, and they appear trendless. As with party membership, agreement between these political data and the economic data in Figure 1 escapes the naked eye.

I will attempt to bridge this apparent disjunction between economic and political differences in Section VI.

### III. The Calibration of Economic Interest and Congressional Voting

Is there, below the surface of the seemingly contradictory data discussed in the two previous sections, some historically durable connection between the way Congressmen vote and their constituencies' economic stake in that vote? I want to answer this with conventional, easily replicable statistical analysis, and this demands that I have plausible empirical summaries of both the votes and the economic interests. These demands are perhaps too formidable to cope with a history in which, e.g., the size and scope of the federal government has grown dramatically, so that the menu of issues facing Congress and the nature of the "stakes" may be much different today than in 1900. My first task, therefore, is to show that there is enough historical consistency in both the nature of the "stakes" and the pattern of voting to make the subsequent rather unadorned empirical analysis at least suggestive.

To get at the consistency of the "stakes", I focus on the redistributive element in federal policies. I showed earlier that contemporary budget policy

plausibly redistributes wealth away from high income, manufacturing-intensive and, possibly, large urban areas. While a long history of the joint allocation of federal spending and taxes is unavailable, it seems to have had the same redistributive character, at least with respect to income, since 1950 (Reynolds and Smolensky, 1977). Income tax collection data, sufficient to replicate the sort of regression on line A.2a in Table 1, are available for most of the relevant historical period, and they too show a fairly consistent historical pattern. I regressed the log of the income taxes/income ratio in each state in the years 1920, 30, ..., 70 on the same three variables as in Table 1 plus time dummies and obtained:

$$\begin{aligned} \text{Log (Tax/Income)}_{it} &= \text{Constant} + \text{coefficients} \times \text{YEAR} \\ &+ \text{dummies} + .59 \left( \frac{\text{Per Capita Income}_{it}}{\text{US Per Capita Income}_t} \right) + .011 \times \text{URB}_{it} + .006 \text{ MFG}_{it} \\ &\quad (5.0) \quad (5.4) \quad (3.8) \\ R^2 &= .95, \text{ S.E.} = .32, \\ \text{where } i &= \text{state, } t = 1920, 30, \dots, 1970^6 \end{aligned}$$

When the regression is estimated separately for each of the six years, the coefficients are not always significant, but 17 of the 18 are positive and all 18 simple correlations are significantly positive. This cursory look at a few pieces of data yields at least a broad hint about the nature of the stakes in

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<sup>6</sup>The sample is the 48 continental states, except Delaware, which is an extreme outlier in the earlier years. Tax data are from U.S. Internal Revenue Service, Annual Report of the Commissioner, various years and comprise personal income and employment taxes. See Table 1 for definition of URB and MFG, and see Table 3 for sources.

political redistribution: it suggests that the interests of constituents from high income, manufacturing--intensive and urban areas have generally been asking for opposition by their Congressmen to expansion of the federal budget for at least the last 60 years.<sup>7</sup> In the subsequent analysis I use the income, urbanization and manufacturing measures to summarize the diversity of interest in redistribution across Congressional constituencies.

I compare these interests with an equally simple measure of Congressional voting behavior: the extent of a member's support for the position taken by the majority of Northern Democrats. While the details of my treatment of Senators and Representatives differ, nothing essential will be lost if I first describe my procedure for Senators and then explain why I think it results in an historically consistent measure of voting behavior.

From each Congress, from the 63rd (when popularly elected Senators began sitting) to the 96th (1980), I drew a sample of 25 bills on which record votes were taken.<sup>8</sup> I included only votes on "economic" (i.e., non-defense budgetary and economic regulatory) issues where the winning side had less than a 2-1 margin and where over 1/2 the Senators voted.<sup>9</sup> These criteria were meant to

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<sup>7</sup>The qualifications to this conclusion would include: 1) Non-income taxes--customs and excises--were far more important revenue sources prior to War II than today, and there is no presumption that their geographical distribution followed that of income taxes. In addition, customs duties provided net benefits to protected industries. 2) Other forms of federal government activity--e.g., regulation--could have different distributional implications than spending and taxes, so general opposition to expansion of government economic activity need not be in the interest of, e.g., a high income constituency.

<sup>8</sup>The voting data are from tape files compiled by the University of Michigan Interuniversity Consortium for Political and Social Research (ICPSR). The files give a brief narrative description of each record vote and the position taken by each Congressman.

<sup>9</sup>Today a record vote almost always attracts substantial participation, but prior to the 1930s it was not uncommon for a majority of Senators to be absent without declaring a preference on a vote. I counted any expression of support or opposition--paired votes and announced positions--as a "vote."

limit the analysis to controversial issues with significant redistributive elements. Each Senator's vote on each bill was then coded +1 if he voted in favor of the position taken by the majority of Northern Democrats, or 0 if he voted the other way. Call the dichotomous variable LIBeral for short. I then extracted the regional<sup>10</sup> elements of LIB on each vote from the regression.

$$(1) \quad [LIB_{ij} - \overline{LIB}_j] = \sum_k B_{kj} \cdot D_{ik} + \text{error term}.$$

where  $LIB_{ij}$  = ith Senator's vote on the jth bill

$\overline{LIB}_j$  = average value of LIB on the jth bill

(i = 1, ..., 96 Senators. j = 1, ..., 25 bills on each session of Congress)

$D_{ik}$  = dummy variable = +1 if Senator i represents a State in Census Region k; 0 otherwise k = 1, ..., 9 Census Regions

$B_{kj}$  = Bill-specific regression coefficient of  $D_{ik}$

I also estimated regressions with the same l.h.s. variables as (1) and r.h.s. variables:

$$(2) \quad \text{regional dummies} + C_j(P_i - \bar{P}_j)$$

where  $P_i$  = +1 if Senator i is a Democrat,<sup>11</sup> 0 if Republican

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<sup>10</sup>Since the economic data are available by state, my goal of relating political to economic behavior suggests extracting the state, rather than regional, regularities in LIB. However, with no more than two senators from a state voting on a bill, the "standard error" of the "state" regularity is rather high. Also, the dominant role of regional differences in the inter-state variance of economic variables suggests that "region" is a sensible level of aggregation for my purpose.

<sup>11</sup>Senators who belonged to neither major party were assigned to one of the two main parties as follows. For each of the 25 bills in each session, I calculated the average value of LIB for Democrats and for Republicans. Then I correlated the third-party-Senator's LIB with the difference between the Democrat and Republican average. If the correlation was significantly positive (negative), I called the Senator a Democrat (Republican). In virtually every case these correlations were so high (on the order of  $\pm .8$ ) that there was little doubt about where to put the ostensibly maverick Senator.

$\bar{P}_j$  = average value of P on bill j

$C_j$  = Bill-specific regression coefficient

The "regional element" is simply the regression coefficient,  $B_{kj}$ , on the regional dummy variable. These coefficients range on either side of zero, and each can be interpreted as follows: Suppose the B in (1) for New England on Bill j = +.3. Then the typical Senator from a New England State was 30 per cent more likely than the average Senator to vote in favor of the "LIBeral" position on Bill j. If the B in (2) = + .3, then the typical New England Democrat (Republican) is 30 per cent more likely to vote LIB than the average Democrat (Republican). I then averaged the  $B_{kj}$  from each region over the 25 votes in each session. The resulting time series of these average "regional elements,"  $B_{kt}$ , forms the basis for the subsequent empirical analysis. Since the average of the  $B_{kt}$  across regions is roughly zero<sup>12</sup> in every session, any  $B_{kt}$  measures the LIBeralism of a region's Senators relative to all Senators in that session.

We must pause to ask whether these regional time series are measuring any historically consistent political behavior. For the last 50 years, the answer would be fairly obvious, and it is clear enough from the party coefficients in Table 1. The typical Democratic, especially Northern Democratic position on economic issues since the advent of the New Deal would favor expansion of federal expenditures, particularly on redistributive programs. So a

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<sup>12</sup>More precisely, since the number of states per region varies, a state-weighted average of  $B_{kt}$  across regions is zero.



positive  $B_{kt}$ --i.e., above-average agreement with the Northern Democrat majority--for  $t > c. 1932$  would imply above-average support for progressive redistribution. The same implication seems plausible for the pre New Deal era as well. In my sample of bills from the pre New Deal Congresses, I found two issues recurring often enough to permit meaningful generalization. These were bills to change 1) the level or degree of progressivity of federal income tax rates and 2) tariff rates on imports of manufactured goods. For each such bill in my sample, I computed the difference between the percentage of Northern Democrats and the percentage of Republican votes in favor of increased taxes or progressivity or of increased tariffs on manufactured goods. The results, summarized in Table 2, indicate the clear preference of Northern Democrats for higher/more progressive income taxes and lower tariffs on manufactured goods. While the distributive implications of their income tax policy are reasonably clear, I am unaware of any evidence on the incidence of tariffs which makes it equally clear that Northern Democratic opposition to them is part of a consistent pro-redistributive policy. However, the first-order protective effects of tariffs in the early 20th century would appear to be regressive: they raised incomes of individuals (owners and workers in manufacturing) who, in a society with a large, low income agricultural sector, had above average income. So, with some uncertainty, it seems plausible to characterize the economic policy favored by Northern Democrats as consistently pro-redistributive for all of this century. And my suggestive acronym, LIB, for votes in favor of the Northern Democrat position is meant to denote a presumption of such consistency.

Table 2  
Differences Between Northern Democrat  
and Republican Position on Income Tax  
and Tariff Issues, Vote Samples for  
61st-74th Congresses

Issue and Position	Number of Votes	
	Senate	House
A. <u>For Higher Income Taxes or More Progressivity</u>		
1. Total Bills	<u>21</u>	<u>11</u>
a. % Northern Dems (ND) For > % Republicans(GOP)	14	10
b. % ND < % GOP	3	0
c. No significant difference	4	1
B. <u>For Higher Mfd. Good Tariffs:</u>		
1. Total Bills	<u>32</u>	<u>21</u>
a. % ND > % GOP	0	0
b. % ND < % GOP	30	20
c. No significant diff.	2	1

Source: ICPSR File.

The main conclusions from this brief tour of 20th century economic and political data are: 1) high values of  $B$  (or LIB) connote Congressional support for a progressive redistributive economic policy; 2) the main beneficiaries of such policies should be found in poor, non-urban, non-manufacturing-intensive areas.

#### IV. Empirical Results: The Historical Connection between Economics and Politics

In light of the preceding discussion, I analyze the link between economics and politics in terms of three models of the process:

1. Only economic forces matter in politics.
2. Economic forces don't matter at all, i.e. historical regional political differences persist in spite of economic change.
3. Both economics and history matter.

For the Senate, I have estimates of each region's  $B_k$  - the relative degree of liberalism of its Senators - for each session of Congress from the 63rd through the 96th (1913-1980). The economic data (income, urbanization, manufacturing intensity) are consistently available only every decade. As a compromise between the fuller political data and leaner economic data, I computed a) 5 year averages of the  $B_k$  and b) semi-decadal values of the economic variables (by interpolation of the decade-end values). For consistency with the political measure, I measured the economic variables relative to their period means as well. This resulted in 126 observations on relative political behavior and relative economic conditions: one for each of 9 regions in each of 14 periods ending 1915, 1920, ..., 1980. Table 3 summarizes the results of implementing each of the three models on this body of data.

There are two dependent variables: the relative liberalism of a region's Senators without regard to party in cols. 1-3 and relative liberalism adjusted for party (i.e. the deviation of a region's Democrats or Republicans from their party's average) in cols. 4-6. The first of each triplet of regressions uses only economic variables as regressors, while the second uses only regional dummies. Neither the "economics only" nor "regional inertia only" models explain the data nearly as well as the eclectic models, which are the last of each triplet. The coefficients of both the economic and regional variables tend to be estimated more precisely in the third regression than are their counterparts in the first two regressions. Thus, these data suggest that economic forces have combined with persistent regional differences to produce the observed senate voting patterns.

The same conclusion emerges from analysis of voting in the House of Representatives. Here, to economize on computation costs, I sampled votes only from those sessions ending in year 0 and year 6 of each decade from 1910 through 1980. However, with over 400 Representatives, there are sufficient degrees of freedom to allow the State, as well as the region, to be the unit of analysis. Accordingly for each House vote<sup>13</sup> I estimated equations like (1) and (2) except that 48 state dummy variables, rather than just 9 regional variables, appear in them. The coefficients of the state dummies from (1) and (2) were then averaged, state-by-state over the 25 vote regressions in each session to provide my measure of the political behavior of a state's House delegation for that session. This yielded a sample of 720 observations on the measure of political behavior--one for each of 48 states in each of 15

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<sup>13</sup>As with the Senate, I drew samples of 25 votes--on criteria like those for the Senate vote samples--from each of the sessions included in the analysis.

Table 3.  
Regressions of Political Liberalism in the  
Senate on Economic Characteristics and  
Regional Dummies. 5 year periods  
1910-15 to 1975-80, 9 Regions.

Model	Dependent Variable and Model			Liberalism ( $B_{kt}$ )--net of		
	Liberalism ( $B_{kt}$ )--no adjustment for Party			Party effect		
	Econ. Only	Region Only	Both	Econ. Only	Region Only	Both
Independent Variables:	(1)	(2)	(3)	(4)	(5)	(6)
<u>Economic:</u>						
1. MFG	-.281		-.576	-.199		-.436
	2.2		1.5	1.9		1.8
2. PCI	-.319		-.501	.018		-.374
	3.3		5.1	.2		5.9
3. URB	.288		-.467	.232		-.195
	1.3		1.5	1.3		1.0
<u>Regional Dummies:</u>						
4. New England (ME,NH,VT,MA,RI,CT)		-.071	.138		.029	.171
		2.2	2.9		1.4	5.6
5. Mid-Atlantic (NY,NJ,PA,DE,MD)		-.060	.227		.037	.223
		1.9	5.9		1.8	8.9
6. EN Central (OH,IN,IL,MI,WI)		-.022	1.80		.032	.166
		.7	4.8		1.5	6.9
7. WN Central (MN,IA,MO,ND,SD,NE,KS)		-.064	-.193		.040	-.042
		2.0	5.6		1.9	1.9
8. S. Atlantic (VA,WV,NC,SC,GA,FL)		.039	-.128		-.103	-.207
		1.2	2.4		4.9	6.0
9. ES Central (KY,TN,AL,MS)		.074	-.210		-.037	-.222
		2.3	3.7		1.8	6.1
10. WS Central (AR,LA,OK,TX)		.047	-.148		-.084	-.219
		1.5	4.2		4.0	9.6
11. Mountain (MT,ID,WY,CO,NM,AZ,UT,NV)		.007	-.077		-.002	-.060
		.2	1.3		0.1	1.5
12. Pacific (WA,OR,CA)		.050	.209		.085	.188
		1.6	4.9		4.1	6.9
R <sup>2</sup>	.24	.17	.57	.09	.38	.69
SEE	.112	.119	.087	.093	.078	.057

**Notes to Table 3:**

Dependent Variables: For columns (1) - (3), the variable is derived from regression estimates of equation (1) (see text). Coefficients of the regional dummies in those vote regressions are averaged region-by-region over the 25 votes in each session. Then these regional averages are further averaged over time into 5 year averages as follows: Since each session of congress ends in an even numbered year, let  $\bar{B}_{k2}, \bar{B}_{k4}, \dots, \bar{B}_{k10}$  represent the average coefficient for region  $k$  in the 25 vote regressions for a session ending in year 2, year 4, etc. of a decade. The dependent variable for the first five year period in a decade is  $\frac{1}{2.5} \times (\bar{B}_{k2} + \bar{B}_{k4} + .5\bar{B}_{k6})$  and that for the second five-year period is  $\frac{1}{2.5} \times (.5\bar{B}_{k6} + \bar{B}_{k8} + \bar{B}_{k10})$ . (For the period ending 1915, the calculation is  $\frac{1}{1.5} (\bar{B}_{k4} + .5\bar{B}_{k6})$ , because I exclude data from Senates without popularly elected senators).

The variable for columns (4) - (6) is constructed in the same way as that for cols. (1) - (3) except that it is based on regression coefficients from equation (2) which includes a Party dummy.

The vote data on which these variables are based come from the IPCRS Congressional vote files.

Independent Variables: Economic--each of these has the form  $(x_{kt} - \bar{x}_t)$  where  $x_{kt}$  is an average over the states in a region in year  $t$  and  $\bar{x}_t$  is a 48-state average for  $t$ . (Alaska and Hawaii are excluded), and  $t$  is every 5 years from 1915 through 1980. The definition and sources of the state data are:

1. MFG = percent of non-agricultural labor force in manufacturing. For 1940 on this comes from the U.S. Bureau of Labor Statistics, Handbook of Labor Statistics. For 1910-40, I use (gainful workers in manufacturing/all non-farm gainful workers) from Everett S. Lee, Ann R. Miller, Carol P. Brainerd & Richard A. Easterlin Population Redistribution and Economic Growth, United States, 1870-1950 v.I. Philadelphia American Philosophical Society, 1957. I regressed the BLS data on the Lee et al data for 1940 and 50 ( $R^2 > .95$ ) and used the regression coefficients and the Lee et. al data to generate estimates of the BLS measure for years prior to 1940.
2. PCI. Log of per capita personal income. For 1930-80, from U.S. Bureau of the Census, Historical Statistics of the U.S. and Statistical Abstract. For 1920, Maurice Leven, Income in the Various States. New York: National Bureau of Economic Research, 1925. for 1910. Lee et. al, op. cit. supra.
3. URB. Percent of state population in urban areas from Historical Statistics and Statistical Abstract.

For the middle year of each decade, each variable is a linear interpolation of the value at the beginning and end of the decade.

**Notes to Table 3 (continued):**

Regional dummies each = +1 if the dependent variable is for region  $k$ , 0 otherwise. The regions are as defined by the Census Bureau, except that Delaware and Maryland are moved from the South Atlantic to Middle Atlantic region.

The dependent and first three independent variables are in fractions of 100. So, e.g., the coefficient of MFG in col. 1 means: "in a region where MFG is 10 percent above the national average, Senators will vote LIB 2.81 percent less frequently than the average Senator". The coefficients of the regional variables in col. 3 are given for MFG = PCI = URB = 0. So, e.g., the coefficient for New England in col. 3 means "if New England had the national-average economic characteristics, its Senators would have voted LIB 13.8 percent more frequently than the average Senator". For columns (4) - (6), these statements apply to the deviation of the average Democrat (Republican) Senator in a region from the average of all Democrats (Republicans).

The residuals from the regressions in col. 3 and 6 are both serially correlated ( $r \approx .35$ ). (This is partly induced by the averaging process used in generating the data, in that the dependent variable for adjacent periods shares the common term  $.2\bar{E}_{k6}$  (see above)). Accordingly, I reestimated these regressions via GLS. The results were virtually identical to those reported here, except that t-ratios were smaller than those reported here (below coefficients). E.g., the GLS t-ratios for MFG, PCI and URB were 1.1, 4.2 and 1.4 for the col. 3 regression and 1.0, 4.6 and 1.1 for col. 6.

sessions ending 1910, 16, 20, 26...1980. The results of regressing these on the same sort of combinations of economic and locational dummy variables as for the Senate are shown in Table 4. Again, the eclectic models (cols. 3 and 6) fit the data significantly better than either of the other two models.<sup>14</sup>

It is, at this point, no more than convenient shorthand to describe the preceding results as showing that "economic" change modifies "historical" inertia. I will provide some motivation for the description later by showing that there is in fact considerable inertia in the "history" - i.e. that the coefficients of the regional dummy variables in cols. 3 and 6 of Tables 3 and 4 are stable. But, however they are described, the statistical significance and large magnitudes of these regional differences are a challenge to future research: can we find relevant economic variables with regional histories much different than those already in my analysis whose inclusion would reduce the explanatory power of the regional dummies?

In the next section, I use the results in Tables 3 and 4 to analyze historical changes in voting patterns, but they also reveal interesting regularities in the average "levels", as well as changes of political behavior:

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<sup>14</sup>The economic variables appear to have less marginal explanatory power over the "location only" model for the Senate (compare the change in SEE from columns 2 to 3 or columns 5 to 6 in the two tables). However, this is due to the larger number of locational dummies in the House regressions, and the consequent ability to better "explain" state idiosyncracies. If the House data are, like the Senate data, grouped into regions and the Table 3 regressions replicated exactly (i.e. with regional economic and dummy variables), the SEE's are as follows:

col. 1: .116	col. 4: .086
col. 2: .124	col. 5: .075
col. 3: .087	col. 6: .057

Here the gain in SEE from col. 2 to 3 or col. 5 to 6 is around twice that in Table 4 and almost identical to that in Table 3 for the Senate.



1. The coefficients of the economic variables in cols. 3 and 6 are "sensible" (unlike their contemporary counterparts in Table 1): These variables, all of which we have seen to be negatively correlated with benefits from redistribution, are also negatively correlated with voting for redistribution.

2. "Economics" and "history" have tended to be opposing forces. The opposition shows up several ways.

a) Compare the regional coefficients in cols. 2 and 5 of either Table 3 or 4 on the one hand with their counterparts in cols. 3 and 6 on the other. In my shorthand, the latter coefficients show the effect of "history" alone, because "economics" is separately accounted for in these regressions. The coefficients in cols. 2 and 5 show the net impact of history and some average of economic forces. Note that these "net" measures range less broadly ( $\pm .10$ , very roughly) than the "pure history" measures (the range in cols. 3 and 6 is around  $\pm .20$ ). Thus, economic forces have typically dampened the effects of history. In particular, they have dampened the South's conservatism and the North's liberalism. But

b) the same dampening shows up within regions: In Table 4, note the smaller intra-regional variation (the entries in parentheses) of the "net" coefficients in cols. 2 and 5 v. their "pure history" counterparts in columns 3 and 6.

c) Subtract the entries in col. 3 (or col. 6) from those in col. 2 (or col. 5). This operation shows the average direction of the effect of regional economic forces in modifying "history", and it almost always yields a number opposite in sign to the impact of history. For example, the entry on line 4, col. 6 of Table 3 tells us that, holding economic forces constant, the typical New England Senator votes "liberal" 17% more frequently than his party

Table 4  
Regressions of House Voting Patterns  
on Economic Characteristics  
and State Dummies. 15 Congresses  
(1910-80), 48 States.

Model	Dependent Variable and Model			Liberalism--net of party effect		
	Liberalism ( $B_{kt}$ )--no adjustment for Party			effect		
	Econ. Only (1)	State Only (2)	Both (3)	Econ. Only (4)	State Only (5)	Both (6)
Independent Variables:						
<u>Economic:</u>						
1. MFG	-.134		-.273	-.042		-.151
	2.1		1.7	1.1		1.5
2. PCI	-.323		-.327	.093		-.163
	7.5		5.4	3.5		4.4
3. URB	.234		-.878	.070		-.483
	3.2		6.6	-1.6		6.0
<u>State Dummies</u>						
<u>Regional Averages</u> (Std. Dev. within Region)						
4. New England		-.085	.104	.042		.144
		(.12)	(.35)		(.02)	(.12)
5. Mid-Atlantic		-.002	.297	.042		.201
		(.08)	(.13)		(.01)	(.07)
6. E.N. Central		-.060	.124	.026		.125
		(.05)	(.09)		(.02)	(.05)
7. W. N. Central		-.087	-.213	.058		-.010
		(.12)	(.22)		(.05)	(.06)
8. S. Atlantic		.100	-.082	.093		-.189
		(.04)	(.09)		(.06)	(.06)
9. E.S. Central		.115	-.144	-.057		-.193
		(.05)	(.11)		(.09)	(.12)
10. W.S. Central		.150	-.006	-.066		-.148
		(.02)	(.09)		(.03)	(.04)
11. Mountain		.025	.081	-.017		-.048
		(.11)	(.16)		(.04)	(.06)
12. Pacific		-.011	.168	.059		.154
		(.04)	(.14)		(.02)	(.06)
R <sup>2</sup>	.09	.30	.45	.02	.31	.43
SEE	.205	.185	.165	.126	.109	.099

**Notes to Table 4:**

See Note to Table 3 and text for definitions and sources of variables. Each of the 720 observations is on a state in a session. The sessions are at 4 or 6 year intervals 1910, 16, 20, 26...80. The dependent variable is the average coefficient on a state dummy variable from 25 vote regressions like equations (1) and (2) estimated in each session. The regressions used for estimating the dependent variable for cols. 4 - 6 include a party dummy.

The Economic variables are deviations of state variables from a 48 state average for each session.

The regressions in cols. (2), (3), (5), (6) include 48 state dummies. Their coefficients are summarized here by region: the standard deviation of the state coefficients in a region is shown in parentheses below and to the right of the regional mean of these coefficients. These means have the same interpretation as their counterparts in Table 3--i.e., they show the difference between frequency of liberal voting in a region and in whole House (cols. 2, 3) or within a party (cols. 5, 6).

I reestimated the regressions using weighted least-squares, with (number of congressmen)<sup>-1/2</sup> as the weight, because analysis of the residuals revealed some heteroscedasticity. But the coefficient and t-ratios of the economic variables were virtually identical to those reported here.

colleagues. But when economics is not held constant (col. 5) this excess liberal frequency is only 3 percent. The implication is that "economics" has, on average over the 20th century, pulled against these Senators' "natural" liberalism.

3. Economic forces work in part to change the behavior of Congressmen from the same party, but also to change the party composition of Congress. To see this, compare the coefficients of the economic variables in col. 6 (which describe intraparty behavior) with those in col. 3 (where interparty differences are not removed). The former have the same signs but are smaller absolutely than the latter. This says that, e.g., higher income in a region makes both Democrats and Republicans in that region more conservative (col. 6, line 2) but it makes the average Congressman still more conservative (the absolute value of col. 3, line 2 exceeds that of col. 6, line 2 in both tables). This implies an increase in the number of more conservative Republicans representing that region. Compare also the sizes of the differences between the regional coefficients in cols. 2 and 3 on the one hand with those between cols. 5 and 6 on the other. These measures of the impact of economic forces in modifying "history" tend to be smaller absolutely within parties (col. 5 - col. 6) than within the Senate or House as a whole (col. 2 - col. 3), though they go in the same direction. Again, the implication is that if "economics" impels toward, e.g., more conservative voting part of the impulse is reflected in the replacement of members of the more liberal party. It appears that Congressmen are at least partly constrained by the central position of their party: they can move away from this position to accomodate the economic interests of their constituency but not always far enough to remain in office. This finding sheds some light on the previously noted fact that inter-regional differences in party composition began

narrowing well after economic differences began narrowing. The explanation implicit in my data is that small changes in economic interest can be accomodated by shifts in position within a party but that their cumulation over time eventually breaks a party's hold on a region.

V. The Economic Basis of Historical Change in Congressional Politics

So far, I have shown that voting patterns in a typical Congress can be described by the interaction of economic forces and persisting regional differences, rather than by the working of economic forces alone. That description, however, implies that changed economic circumstances are the sole driving force behind historical change in voting patterns, and here I want to see how useful that implication is: How well does such a model describe the changes that have occurred over the course of the 20th century? Are the political changes attributable to economic change substantial or trivial? Are they substantial enough to overcome or just slightly modify the otherwise persisting regional differences?

The answers are summarized in Table 5 (for the Senate) and Table 6 (House). Both reveal a profound change in regional voting patterns from the early part of the century, and they show that nearly all this change can be attributed to changed economic interests. The basic facts are on the first three lines of each panel of each table. In the early part of the century, the main support for liberal economic policy comes from the South, and the heaviest opposition from the Northeast and Pacific states. (See Panel A.) Today, these alignments are exactly reversed. The move toward liberalism in the North and conservatism in the South, of course, affected party alignments: the number of Northern Democrats grew and victory for Southern Republicans became conceivable. But a profound change in the same direction also occurred within each party. This is shown on the first three lines of

Table 5  
Change in Frequency of Liberal Voting in the  
Senate, c. 1920 - c. 1975, Regions

LIBERAL VOTING MEASURE:	REGION AND VOTING MEASURE x 10 <sup>3</sup>									S.D. Across Regions (10)
	NE (1)	MA (2)	ENC (3)	WNC (4)	SA (5)	ESC (6)	WSC (7)	MT (8)	PAC (9)	
A. Within Senate-- (No Party Adjustment)										
1. Actual c. 1920	-225	-118	-75	-71	206	188	171	0	-58	152
2. Actual c. 1975	154	89	148	-6	-136	-139	-119	-90	135	128
3. Change (2. - 1.)	379	207	223	65	-342	-327	-291	-90	193	273
4. Predicted Change (Col. 3, Table 3)	290	189	109	-121	-214	-274	-230	-63	115	204
5. Residual (3. - 4.)	89	18	114	186	-128	-53	-61	-27	78	100
B. Within Parties-- (Net of Party effect)										
1. Actual c.1920	-44	-30	18	50	-12	-22	-51	-13	48	37
2. Actual c.1975	142	210	126	40	-227	-205	-180	-53	155	171
3. Change (2. - 1.)	187	240	108	-10	-214	-183	-129	-41	107	163
4. Predicted Change (Col. 6, Table 3)	182	121	66	-85	-147	-192	-148	-26	79	134
5. Residual (3. - 4.)	5	119	42	75	-67	9	19	-15	28	53

**Note:** The entries in the table are based on the measure of "liberal" voting analyzed in Table 3 - i.e. the frequency of agreement with the majority position of Northern Democrats. So, e.g., the -225 on line A.1, col. 1 means that New England Senators voted with the Northern Democrat majority 22.5 percent less frequently than the average U.S. Senator (over a period centered on 1920). The entries on lines A.1 and A.2 are just the average of the dependent variable in Table 3 cols. 1 - 3 ( $\times 10^3$ ) for the 1915, 1920, 1925 periods and 1970, 1975 and 1980 periods respectively. B.1 and B.2 use the dependent variable in Table 3, cols. 4 - 6.

The entries on lines A.4 and B.4 are the changes in the predicted values over the relevant period from the regressions in cols. 3 and 6 of Table 3 respectively. These can be found by multiplying the change in each economic variable by its coefficient from the indicated Table 3 regression and summing.

Table 6  
Change in Frequency of Liberal Voting in the  
House, c. 1920 - c. 1975, Regions

LIBERAL VOTING MEASURE:	REGION AND VOTING MEASURE x 10 <sup>3</sup>									S.D. Across Regions (10)
	NE (1)	MA (2)	ENC (3)	WNC (4)	SA (5)	ESC (6)	WSC (7)	MT (8)	PAC (9)	
A. Within House-- No Party Adjustment)										
1. Actual c. 1920	-227	-108	-90	-13	171	230	231	-35	-144	169
2. Actual c. 1975	183	108	-54	-85	-80	-91	-35	-117	73	105
3. Change (2. - 1.)	410	216	36	-98	-252	-321	-266	-82	217	253
4. Predicted Change	340	210	121	-84	-187	-195	-247	-90	143	207
5. Residual (3. - 4.)	70	6	-85	-14	-65	-126	-19	8	74	67
B. Within Parties-- (Net of Party effect)										
1. Actual c.1920	-65	-13	2	73	-23	25	-5	-28	20	39
2. Actual c.1975	170	120	45	-10	-183	-130	-180	-58	65	129
3. Change (2. - 1.)	235	133	43	-83	-160	-155	-175	-30	45	142
4. Predicted Change	182	115	66	-46	-103	-107	-136	-50	78	114
5. Residual (3. - 4.)	48	18	-23	-37	-67	-48	-39	20	-33	36

**Note:** See note to Table 5. The same techniques used to generate data in that table are used here. Predicted and actual values come from regressions like those in Table 3 rather than Table 4, i.e., the House data are grouped into regions and regressions like those in Table 3 (using 9 regional dummies) are used to generate the coefficients of the economic variables which are then used to calculate the predicted changes on lines A.4 and B.4. The data are from 4-period averages with 1910, 1916, 1920, 1926 comprising the first period and 1966, 1970, 1976 and 1980 the second.

Panel B in the tables. In the early 20th century, when economic differences were larger, regional differences within parties were relatively small (line B.1)<sup>15</sup> But in the 60 years after WWI, the Northern members of both parties grew more liberal and the Southerners more conservative (B.3). These within party changes have accounted for a substantial part of the overall change in Congress (compare the Standard Deviations in col. 10 for line A.3 and B.3) and have produced considerable regional differences within parties today.

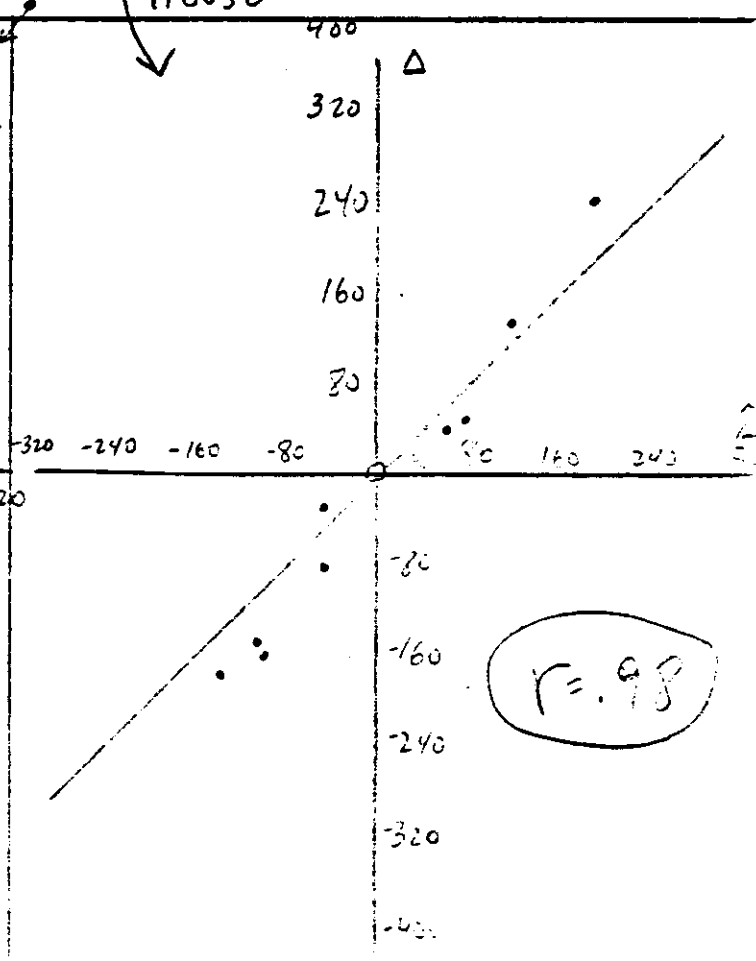
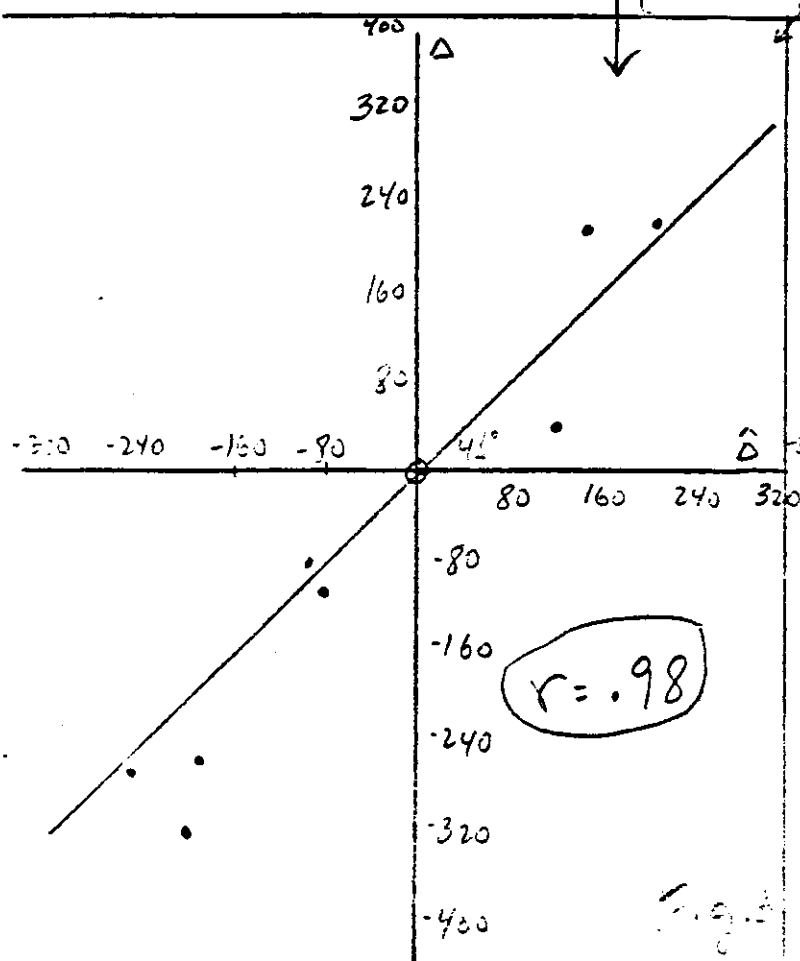
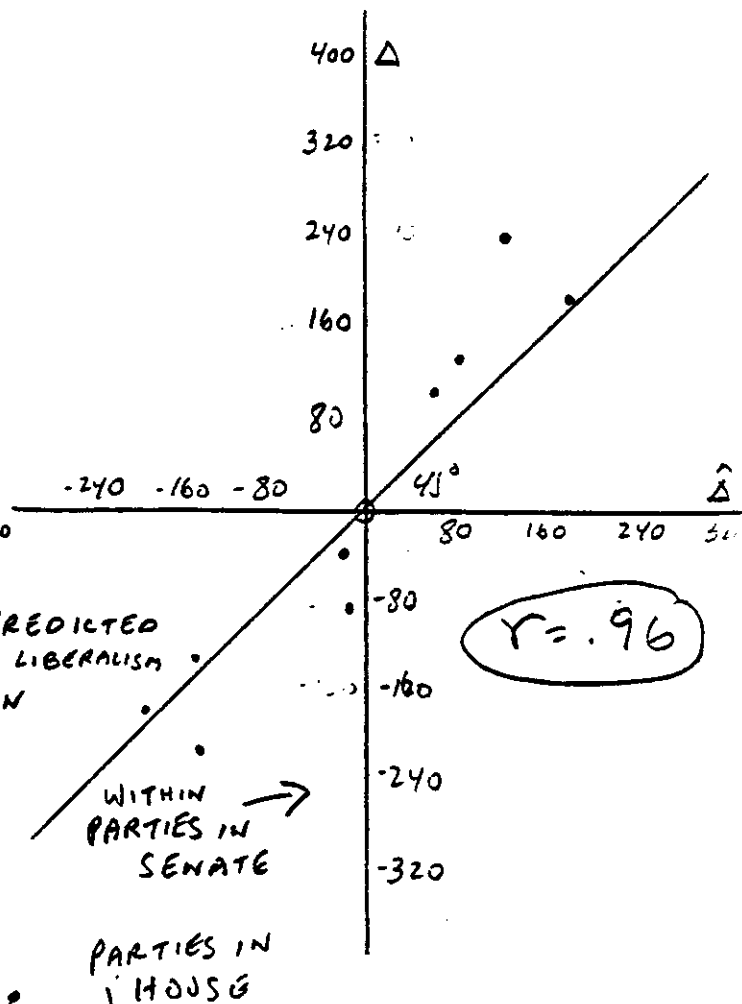
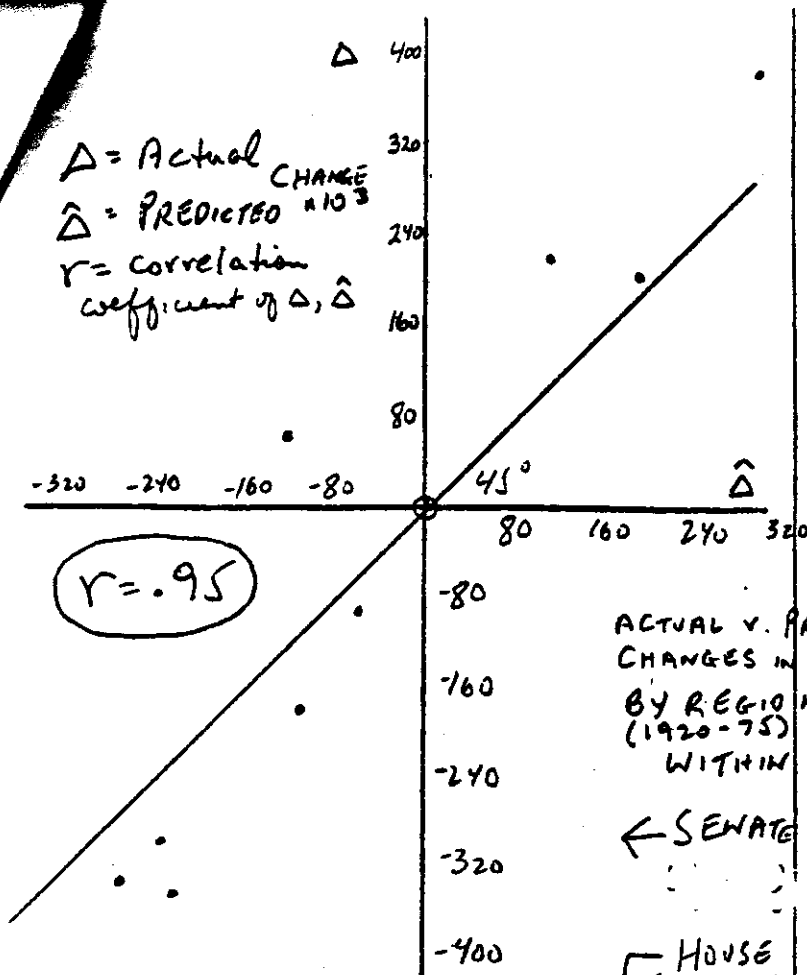
I think that the most noteworthy finding of this paper is the remarkably close degree to which these profound political changes can be attributed to changes in economic interest. This is shown by comparing lines 3 and 4 of each panel in both Table 5 and Table 6. These comparisons are reproduced in Figure 3. The "predicted changes" on line 3 are obtained from the coefficients of the economic variables in the regressions in col. 3 or col. 6 in Table 3 or 4 and the change in those variables from the early to late 20th century. There are 36 predicted changes in Tables 5 and 6 (two voting measures for each House for each of nine regions). Only one of these disagrees with the sign of the actual change. Only two deviate from the actual change by more than half the standard deviation of the actual change. The correlation coefficients between these actual and predicted changes are shown in Figure 3; none are below .95.<sup>16</sup>

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<sup>15</sup>The "explanation" for this strange pairing which is consistent with my previous results rests on the opposition of "history" and "economics". Prior to WWI the strong Northern economic interest in conservative economic policy and Southern interest in liberal policy clashed with opposite historical tendencies (see the pattern of the dummy variables in Tables 3 and 4, cols. 3 and 6). At the level of Congress as a whole (line A.1) the economic interest dominated, but within parties the two forces offset each other (B.1).

<sup>16</sup>The regressions in Table 4 and associated data permit comparison of actual and predicted changes across the 48 states. These state-level data are also highly correlated (.82 for both the within-House and within-party measures). In spite of the greater "noise" in these state-level data, the positive correlation holds even after the very large regional elements are removed: the correlation of the actual with predicted deviations of state changes from the regional means is .37 for within-House data and .49 within-party (both are significant).





The same sort of results obtain if the longer period is divided into two subperiods of roughly equal length centered on the end of WWII. This is done in Table 7. These subperiods have somewhat different characteristics - more stable regional party alignments and slower change in regional economic differences in the pre WWII period - but the simple economic model of political change is able to rationalize most of the behavior in both subperiods: Of the 72 pairs of actual and predicted changes in Table 7 the signs agree in 66 cases. The correlation coefficient between these two variables never falls below .80 in the eight series in the Table, and averages .86. The substantive message of Table 7 is that the South's move away from liberal policies and the North's move toward them is not compressed into the recent period when regional party alignments began changing. The economic forces underlying these shifts and the political response to them are palpably evident long before this and continue to work essentially up to the present.

Table 7 also has implications for a potential alternative to my economic explanation of the political facts: So far I have forced on the data a model in which economic change is the only source of political change. An alternative story would be that regional "history", which I have so far assumed to have remained unchanged, has in fact changed as well. That alternative cannot be ignored in light of the seemingly massive and long-lasting political realignments engendered by the New Deal. Could not, e.g., the post New Deal rise of labor union and ethnic and racial constituencies in the North have been responsible for the shift toward liberal politics in that region? Table 7 provides part of the answer--the shift was going on before the New Deal. But I sought a more formal test. Instead of assuming that the regional effects in the col. 3 and 6 regressions of Tables 3 and 4 never changed, I added a set of post-New Deal regional dummies; each = 1 for an

Table 7  
Actual and Predicted Changes in  
Frequency of Liberal Voting in Congress  
Two Sub-periods (c. 1920-1945, 1945-1975) Regions

Type of Change and Period	REGION AND VOTING MEASURE x 10 <sup>3</sup>									Correlation of Actual and Predicted (10)
	NE (1)	MA (2)	ENC (3)	WNC (4)	SA (5)	ESC (6)	WSC (7)	MT (8)	PAC (9)	
A. Within House of Congress										
1. Senate, 1920-45										
a. Actual Change	194	136	-10	-80	-156	-61	-138	74	77	.92
b. Predicted Change	114	34	-12	-45	-103	-42	-49	-15	67	
2. Senate, 1945-75										
a. Actual Change	185	71	233	145	-187	-266	-153	-164		.82
b. Predicted Change	175	155	121	-76	-111	-232	-180	-48	48	
3. House, 1915-1945										
a. Actual Change	112	83	-6	-102	-63	-154	-91	128	252	.84
b. Predicted Change	131	46	-34	-38	-101	-45	-102	8	127	
4. House, 1945-75										
a. Actual Change	341	164	84	59	-274	-246	-268	-239	11	.93
b. Predicted Change	227	168	147	-49	-106	-168	-160	-81	23	
B. Within Parties										
1. Senate, 1920-1945										
a. Actual Change	104	63	4	-80	-51	45	-23	31	31	.80
b. Predicted Change	76	15	-11	-30	-71	-27	-25	-4	38	
2. Senate, 1945-75										
a. Actual Change	92	179	85	55	-134	-196	-92	-82	6	.90
b. Predicted Change	107	107	77	-56	-77	-165	-124	-22	41	
3. House, 1915-1945										
a. Actual Change	116	63	54	-6	-120	-143	-93	83	97	.82
b. Predicted Change	73	26	-18	-21	-55	-24	-56	-3	70	
4. House, 1945-75										
a. Actual Change	120	67	3	-57	-73	-23	-110	-107	-37	.86
b. Predicted Change	126	92	81	-27	-58	-92	-89	-46	12	

**Note:** Actual and predicted changes are computed in the same manner as in Tables 5 and 6 (see notes to those Tables), but for two subperiods. Three-term averages of the relevant data are computed for an "early", "middle" and "current" period as follows:

The "early" period is an average of 1910, 16 and 20 data for the House and 1915, 20, 25 data for the Senate. The middle period is an average of 1940, 46, 50 data for the House and 1940, 45, 50 for the Senate. The current period is 1970, 76, 80 for the House and 1970, 75, 80 for the Senate. The changes shown above as 1920-45 or 1915-45 are "middle" minus "early" data; the 1945-75 changes are "current" minus "middle" data.

observation on a particular region for 1940 and after, 0 otherwise. The coefficients of these post-New Deal regional dummies show the extent to which regional voting patterns (net of the effects of the economic variables) changed from the pre to the post-New Deal period. Test of the null hypothesis (all regional coefficients are unchanged) generates statistics with an F-distribution as follows:

F(Senate)	= 0.85	(d.f. = 9,105)
F(Senate, within parties)	= 2.09	(9,105)
F(House)	= 1.64	(9,114)
F(House, within parties)	= 2.30	(9,114)
$F_{.05} \approx 2.0$	$F_{.01} \approx 2.6$	<sup>17</sup>

These numbers imply that this null hypothesis cannot be rejected at the 1 percent level for any of the four regressions, but can be rejected at 5 percent for two of them. So, the evidence for ("non-economic") shifts in regional political preferences is weak, and this provides justification for the restricted model in which economic change alone drives political change.

Some evidence on the quantitative, as well as the statistical, significance of the estimated shift in regional preferences is in Table 8. The first two columns show what is already evident in Figure 3: since virtually all of the actual change in behavior is already explainable by a model restricted to economic change (col. 1, repeated from figure 3), dropping that restriction makes little difference (col. 2). Therefore, the only way that the importance of economic change in explaining political change could be cast in doubt by the unrestricted model would be for it to "reapportion"

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<sup>17</sup>For the House, I am testing the hypothesis that coefficients of regional dummies in regressions using regional data changed over time. My computer program could not perform a similar test on the coefficients of the 48 state dummies.

Table 8  
Measures of Relative Impact of Economic Change and  
"Historical" Change on Political Change in  
Congress, WWI to Present.

Type of Change	Correlation Coefficient Actual v. Predicted Chg. from Model		Correlation Coefficient Actual Chg. v. Components of Predicted Chg. in EH Model		Beta Coefficients for Components of Predicted Change in EH Model	
	E (1)	EH (2)	ECON. (3)	HIST. (4)	ECON. (5)	HIST. (6)
A. Within Houses of Congress						
1. Senate	.95	.95	.92	.43	.92	.22
2. House	.98	.996	.93	-.30	1.17	.39
B. Within Parties in						
1. Senate	.96	.96	.95	.08	.99	.30
2. House	.98	.994	.93	.74	.71	.47

Definitions:

1. E: Model in which change in political behavior is due solely to change in economic variables (see Tables 3 and 4, cols. 3 and 6).
2. EH: Model which allows change in regional "history", as well as economic change, to change political behavior. It adds regional-dummy-shifters for the period 1940 and later to the regressions in col. 3 and 6 of Tables 3 and 4. In EH model, the change in political behavior from c. 1920 to c. 1975 has two components.
  - a. ECON = change due to changes in economic variables in EH, holding constant change in regional dummy variables
  - b. HIST = change in regional behavior, holding effects of economic variables constant. This is just the coefficient of the regional dummy shifter.

Data

Col. (1): CORrelation coefficient between ACTual change in political behavior (the relative liberalism of Congressmen in a region) and PREDicted change from model E. (These are also shown in figure 3).

Col. (2): CORR between ACT and total PRED from EH (= ECON + HIST)

Col. (3), (4): Simple CORR between ACT and each of the two components of PRED from EH.

Col. (5): Standard Deviation (SD) of ECON  $\cap$  SD of (ECON + HIST)

Col. (6): SD of HIST  $\cap$  SD of (ECON + HIST)

Columns (5) and (6) show the contribution of each component of the total PRED in EH in SD units. E.g., line A.1 says "each increase of 1 SD in ECON raises total PRED by .92 SD total, while a 1 SD increase in HIST raises total PRED by .22 SD total"

Panel A data are for changes in behavior across all Congressmen without regard to their party. Panel B refers to changes within parties.

explanatory power away from the economic component toward the component measuring change in regional preference. But the remaining columns of Table 8 show that this is not what the unrestricted model does. These are based on the two separate elements of the change in behavior predicted by the unrestricted (denoted EH) model: 1) the ECONomic element, which is the sum of the coefficients of economic variables in EH times the changes in those variables over time and 2) the change in HISTorical preferences, which is the change in the coefficients of the regional dummies from the pre-1940 to the later period. Columns (3) and (4) show that, standing alone, ECON is a much more reliable guide to the data than HIST. Columns (5) and (6) show that ECON is quantitatively a much more important element than HIST in the total change in behavior predicted by the EH model (see Note to Table 8). So, HIST is "small" as well as of dubious statistical significance.

All of this implies that what I had before merely labeled the "persistent historical" elements in political behavior--i.e., the coefficients of the regional dummies in Table 3 and 4--really is persistent. This focuses more sharply my earlier challenge to future research which I set out earlier: an economic explanation of these differences will have to uncover economic differences among regions that have not changed much since the beginning of the century. Given the regional homogenization evident in so many dimensions of economic activity, this is a formidable challenge.

If political change is driven by economic change, what kind of economic change is (should be) most important? In general, we would expect the most important determinants of the interest in redistribution to also be the most important determinants of political change. But the data do not support this unambiguously. In the contemporary data on the spending/taxes ratio (line A.1, Table 1), per capita income is the most "important" variable followed by manufacturing and then urbanization, where "importance" is measured by the

beta-coefficient--the number of standard deviations that  $y$  changes for each S.D. change in  $X$ . On this standard, however, urbanization is most important, followed by income, then manufacturing in the regression explaining the ratio of taxes to income since 1920 on p. \_\_. So, fragmentary data on actual redistribution does not tell clearly whether income or urbanization "should" be the primary determinant of political change. That uncertainty is reflected in the data on political change, summarized in Table 9. These show absolute beta-coefficients between the economic variables and the change (Panel A) or average level (Panel B) of political liberalism. The main message of the Table is that income seems most important in Senate voting and urbanization most important in the House. But income and urbanization are so highly correlated in these data (.9 across regions, .8 across states for the entire period) that estimating their separate effects is bound to be difficult, so the difference between the estimated House and Senate responses to these variables warrants skepticism. The similarity of the historical change in the two bodies (see Tables 5 and 6, where the correlation between the actual changes on line A.3 and B.3 exceeds .9) is more notable than any differences.

#### VI. Solutions to Previous Puzzles

I showed (Section II) that political differences among regions in Congress have not declined along with economic differences. That seeming anomaly, which was evident on comparison of the bottom panels of Figure 2 with any of the series in Figure 1, is restated in panel A of Table 10. This shows simple correlations between the dispersions of the economic and the various Congressional voting measures I have been analyzing. If there is a simple connection between narrowing economic and political differences among states, these should be consistently positive. But they obviously are not. However, if there are persistent regional elements in political behavior, the simplicity of that connection breaks down. There should be a positive correlation over time between the dispersions of economic variables and of voting measures net of the persistent regional element. Accordingly, in panel

Table 9  
Absolute Beta Coefficients. Economic Variables on  
Political Liberalism in Congress

Measure of Liberal Voting	Absolute Beta Coefficient For		
	MFG (1)	PCI (2)	URB (3)
A. Change WWI to Present			
1. Within			
a. Senate	.213	.428	.219
b. House (1) Regions	.087	.334	.504
(2) States	.101	.241	.417
2. Within Parties in			
a. Senate	.270	.534	.153
b. House (1) Regions	.088	.323	.500
(2) States	.107	.232	.442
B. Average Level Congresses 1910 or 1915-1980			
1. Within			
a. Senate	.499	1.011	.474
b. House (1) Regions	.187	.732	.963
(2) States	.175	.416	.710
2. Within Parties in			
a. Senate	.499	.995	.262
b. House (1) Regions	.166	.622	.842
(2) States	.163	.349	.658



**Notes to Table 9:**

Each entry in the table has the form: regression coefficient  
 $\times \left( \frac{\text{S.D. of Independent Variable}}{\text{S.D. of Dependent Variable}} \right)$

The regression coefficients come from: Table 3, col. 3 (lines A.1.a, B.1.a) Table 3 col. 6 (lines A.2.a, B.2.a), Table 4, col. 3 (A.1.b(2) and B.1.b(2)), Table 4 col. 6 (A.2.b(2) and B.2.b(2)). The regression coefficients for the "House (1)" entries come from regressions like those in Table 3 col. 3 and 6 on House data grouped by regions.

The S.D.'s used in Panel A are for changes in the economic and political variables underlying Tables 5 and 6 (see notes to Table 6) and these S.D.'s used in Panel B are for the levels of the variables used in Tables 3 and 4.

Substantively, Panel A describes the relative contribution of each of the economic variables to the changes in Tables 5 and 6, lines A.3 and B.3. For example, note from Table 5 line A.3 that the S.D. of the change in liberalism within the whole Senate is 273. Line A.4. of Table 5 contains predicted changes for each region which are the sum of elements due to the region's change in relative PCI, MFG and URB. The first entry in col (1) in Table 9 says: "if a region's MFG changed by 1 S.D., and all other variables remained unchanged, the predicted change in political liberalism would equal 21.3% of the 273 S.D. of the actual change."

Panel B does the same as Panel A, but for the levels in Tables 3 and 4 rather than changes. I.e., e.g., the entry on line B.1.a col (1) says: "if a region's MFG at a point in time is 1 S.D. different from the average, the predicted liberalism of its Senators would deviate from the average by 49.9% of a S.D. of actual liberalism."

Table 10  
Correlation Coefficients between Standard Deviations of Liberal  
Voting Measures in Congress and of Economic Variables.  
1910 or 1915 to 1980. Across Regions or States

Standard Deviation of Liberal Voting Measure	Correlation Coefficient with Standard Deviation of		
	MFG (1)	PCI (2)	URB (3)
A. Unadjusted (for Persistent Regional or State Differences)			
1. Within			
a. Senate	.10	-.14	.03
b. House: Regions	.48	.45	.53
: States	.01	-.01	.01
2. Within Parties in			
a. Senate	-.86	-.85	-.80
b. House: Regions	-.67	-.74	-.67
: States	-.74	-.66	-.73
B. Adjusted for Persistent Regional or State Differences			
1. Within			
a. Senate	.82	.76	.75
b. House: Regions	.87	.85	.84
: States	.83	.87	.82
2. Within Parties			
a. Senate	.77	.86	.76
b. House: Regions	.82	.83	.85
: States	.71	.76	.79

**Note:** Each entry is a simple correlation coefficient between a time series of standard deviations of an economic variable across regions or states and a time series of a standard deviation of one of the political liberalism measures analyzed previously (see notes to Tables 3 and 4). Each House time series has 15 observations and each Senate time series has 14 observations. See text for method of calculating voting measures used in panel B.

B of Table 10, I subtract the appropriate coefficient of the regional (or state) dummy in Table 3 or 4 from each measure of voting behavior and recompute the simple correlations between the dispersions of the adjusted political and economic variables. These are all strongly positive, as the eclectic model of politics suggested. That is, when the persistent regional element in political behavior are removed, the regional dispersion of political behavior is seen to decline as the regions become more homogeneous economically.

The persistent regional element has to be removed to reveal a tandem decline of political and economic differences because the conflict between "history" and "economics" has abated overtime. Around WWI, the South's historical conservatism and the North's liberalism (see the regional coefficients in cols. 3 and 6 of Tables 3 and 4) clashed sharply with the redistributive interests entailed by Southern poverty and Northern affluence. This clash made regional differences in political behavior smaller than otherwise. However, the clash and it's restraining influence on regional political differences, has diminished with the economic rise of the South and decline on the North.<sup>18</sup> Interestingly, my data imply that regional

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<sup>18</sup>To see formally why the variance of political behavior ( $S^2$ ) across regions need not decline along with the variance of the economic (+ any random) element ( $E^2$ ) of that behavior note that

$$S^2 = E^2 + H^2 + 2rEH$$

where

$H^2$  = variance of the historical (i.e., time-invariant) element across regions, and

$r$  = correlation between the historical and economic (+ random) elements across regions at time  $t$ .

Then

$$\frac{dS}{dt} = \frac{1}{S} \left[ \frac{dE}{dt} (E + rH) + \frac{dr}{dt} \cdot EH \right] .$$

For most periods in our data,  $\frac{dE}{dt} < 0$  , but  $r < 0$  and  $\frac{dr}{dt} > 0$  (the

declining negative correlation between economic and historical elements) so the sign of  $\frac{dS}{dt}$  is indeterminate.

political differences will grow in the future even as the economic element of these differences diminishes.<sup>19</sup>

The vague or even perverse relationship between voting and economic interest often found in contemporary Congresses can also be clarified by my results. (See discussion surrounding Table 1). They suggest that, e.g., wealthy areas sometimes produce liberal Congressmen because the pull of "history" can overcome the push of "interest." This is more likely today, when differences in interest are small, than it has been in the past. If this explanation is correct, then some adjustment for "history" should bring the role of interest into sharper focus in contemporary voting. This adjustment is made in Table 11 which adds "history", in the form of a vector of the coefficients of state dummy variables from the col. 6, Table 4 regression, to some of the regressions in Table 1.<sup>20</sup> The coefficient of this HISTory variable (col. 7) is uniformly positive and significant, which is further testimony to the durability of these sectional differences. More important, the addition of HISTory changes the coefficients of the economic variables in the "right" direction from their Table 1 values (shown in parentheses): that is, income, manufacturing and urbanization, which are negatively correlated with the benefits of redistribution, have algebraically smaller and usually

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<sup>19</sup>In the notation of the previous footnote,  $E^2$  is now so small that, with  $r < 0$ ,  $(E^2 + 2rEH) < 0$  and  $S^2 < H^2$ . Therefore, if  $E$  continues to approach zero, over time,  $S^2$  will rise toward  $H^2$ . For the Senate, in the period 1970-80,  $S = .128$ , while  $H = .185$ . The latter figure is about the maximum  $S$  observed in this century.

<sup>20</sup>These coefficients describe the history of the House and the regressions in Table 11 describe voting in the Senate. This is done because I do not have state-level data for the history of the Senate. I ran the regression in Table 11 using the regional "history" of the Senate. These were qualitatively similar to those in Table 11, but none explained the data as well as its Table 11 counterpart.

Table 11  
Regressions of Senate Voting Patterns, on Economic and  
Political Characteristics.  
States, 1979

DEPENDENT VARIABLE	Coefficient of							R <sup>2</sup>	SE
	HH INC (1)	MFG (2)	URB (3)	MET (4)	SPEND/ TAX (5)	DEMS (6)	HIST (7)		
1. NTUA									
a.					.13	20.8	39.8	.41	10.1
(Table 1)					1.8 (-.01)	4.6	3.4	(.24)	(11.4)
c.	-5.96	-.46	-.59	.27		16.0	92.3	.59	8.7
(Table 1)	3.7 (.48)	2.1 (.03)	2.2 (-.25)	2.0 (.18)		3.9	5.4	(.28)	(11.4)
2. ADA									
a.					.08	32.3	95.0	.68	12.4
(Table 1)					.8 (-.28)	5.8	6.6	(.34)	(17.5)
c.	-3.85	.08	-.52	.02		28.6	148.7	.80	10.2
(Table 1)	2.1 (.65)	.3 (.88)	1.7 (.03)	.1 (-.13)		6.1	7.5	(.51)	(15.7)

**Note:** The regressions follow the same format as counterparts in Table 1, panel B, except for the addition of HIST as an independent variable. HIST is a vector of the coefficients of the state dummy variables in the regression in col. 6, Table 4. I.e., HIST measures the "historical" liberalism of a state's Representatives (I have no State-specific data for Senators) relative to their party mean over the whole 1910-80 period after accounting for economic variables. For comparison the regression coefficients and summary statistics from the corresponding Table 1 regression are shown in parentheses on the lines labeled "(Table 1)."

See Table 1 for definitions and sources of all variables other than HIST.



Meanwhile, I have followed the traditional path in utility analyses of choice, that of focusing on the effects of changes in constraints. The characteristics of American political redistribution suggest that, in general

$$(5) \quad - \frac{dW}{dL} = G(W - \bar{W}) , \quad G' > 0 ,$$

where

$$\bar{W} = \text{average per capita } W.$$

So, in general, as principals'  $W$  and thereby the price of a liberal vote rises, we expect substitution against liberal voting. That implication is strongly confirmed by my data, as is the underlying assumption that the "tastes" in question are stable. I have shown that the simple story in (5) is powerful enough to explain substantially all of the major political realignments among regions in this century. The economic convergence of Congressional constituencies has gradually lowered the price of a liberal vote to Northern Congressmen and lowered the price of a Conservative vote to Southerners. This elemental fact is sufficient to explain 1) why the once conservative North has become liberal and why the opposite occurred in the South; 2) why once more or less homogeneous parties have become regionally divided, with Northern members of either party now more liberal and Southerners now more conservative than their party average, and 3) why Democrats have gained "market share" in the North and lost it in the South. Since the process of economic convergence appears not to have run its course, the strong suggestion of my results is that these political trends will continue. The seemingly paradoxical result predicted by my data will be Congresses which become more sharply divided regionally as their constituencies converge economically.

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