

CLIFFORD WINSTON

Brookings Institution

ROBERT W. CRANDALL

Brookings Institution

Explaining Regulatory Policy

SINCE THE TURN OF THE CENTURY, federal policymakers have regulated both the economic conduct—pricing, entry, and exit—and the social conduct—workplace and product safety, noise, and pollution—of substantial portions of the American business sector. The costs incurred by businesses in complying with these economic and social regulations have become huge, particularly during the past few decades. In 1992 they exceeded \$500 billion a year.¹ Although social regulation has increased steadily over the past twenty-five years, except for a brief dip during the Reagan years, deregulation during the late 1970s and early 1980s in several key industries—including the airlines, rail, and trucking—has freed, at least partially, roughly \$600 billion of output from economic regulation. Naturally, businesses and consumers are curious about what to expect of regulatory policy in the future. Will the trend toward economic deregulation continue? Will social regulation continue to expand?

To try to answer those questions, economists, over the years, have made several attempts to offer a comprehensive theoretical explanation of the determinants of regulation. What objectives have policymakers pursued in their resort to regulation? What causes regulation to spread (as in the case of social regulation during the 1970s) and to recede (as in the case of economic regulation during the 1980s)? Once a theory “explains” regulation, the thinking goes, economists should be able to predict how regulatory policy will evolve. The testable implications of the theories

We are grateful to John Chubb, Robert Hahn, Pauline Ippolito, Dennis Sheehan, Carole Uhlaner, and conference participants for comments and to Chad Shirley and Stephanie Wilshusen for research assistance.

1. Abelson (1993).

economists have come up with so far, however, can be ambiguous, and their explanatory power controversial.²

In this paper we seek to explain federal regulatory policy during the twentieth century (1900–92) by discovering its effect on presidential election results. We construct a model of voting in presidential elections that examines the relationship between the extent of federal regulation in the U.S. economy and the share of the popular vote in presidential elections that the incumbent party wins. We find that regulatory policy indeed influences presidential vote shares. In the first part of the century, voters rewarded an incumbent party's candidate for expanding economic regulation but punished the candidate for expanding social regulation. In the latter part of the century, the situation was reversed: voters rewarded an incumbent party's candidate for expanding social regulation but punished the candidate for expanding economic regulation.

We interpret our findings as consistent with "populist" preferences; that is, voters respond to changes in regulatory policy in a manner that reflects only consumer welfare.³ To be sure, regulatory policy has often been at odds with consumer welfare. The reason for that, we argue, is that politicians draw on a portfolio of policies both to get reelected and to pursue their own ideological interests. They are not necessarily forced to respond to voters' preferences regarding regulation at all times. This political shirking makes predicting the evolution of regulatory policy extremely difficult.

Presidential Voting and Regulatory Policy

Although Congress, the courts, and regulatory agencies are all involved in forming federal regulatory policy, voters will ultimately identify the president as the agent responsible for federal regulatory activ-

2. See, for example, Peltzman (1989) and the comments by Levine (1989) and Noll (1989b).

3. By populist, we mean that the objectives appear to be consistent with an attempt to maximize direct consumer welfare without regard to the indirect effects on welfare that arise from raising business costs and, therefore, eventually the final prices of products.

ities during his term.⁴ If the effects of regulation are important to voters, it should be possible to identify the political effect of regulatory policies in presidential elections.⁵ This exploration could be questioned a priori because, in general, presidents do not appear to be particularly concerned with regulatory policy. Presidents, however, are concerned with the public's perception of policies, including regulation, that intervene in their daily lives.⁶ Indeed, as we note later, the public's perception of many aspects of regulatory policy is revealed in public opinion polls.

Traditional voting models in the economics and political science literature have used macroeconomic and political variables to predict the outcome of presidential elections.⁷ Voting models in the economics literature have also investigated the political impact of changes in government spending.⁸ Both types of models often specify the economic explanatory variables in terms of their change preceding an election. We extend the presidential voting model to include a regulatory policy variable, also specified in terms of its change. We specify our pooled, cross-section, time series model as

$$\begin{array}{l} \text{Incumbent party's share} \\ \text{of the presidential vote} \\ \text{in state } s \\ \text{for the year } t \text{ election} \end{array} = f \left(\begin{array}{l} \text{political variables, } \Delta \text{ macroeconomic variables} \\ \text{from year } t-i \text{ to } t, \Delta \text{ government spending from} \\ \text{year } t-i \text{ to } t, \Delta \text{ extent of economic and social} \\ \text{regulation from year } t-i \text{ to } t \end{array} \right).$$

Changes in the extent of federal economic and social regulation of the

4. Congress in a few instances has passed regulatory bills over presidential veto, and congressional oversight can influence regulatory agency behavior; see Weingast and Moran (1983). It could not be claimed, however, that a president's entire term was characterized by regulatory policy he opposed. In addition, regulatory agency behavior is unlikely to be at variance with presidential wishes for an entire term because the president appoints the heads of these agencies to pursue his regulatory objectives. (For example, President Carter appointed Alfred Kahn to head the Civil Aeronautics Board to initiate airline deregulation and Darius Gaskins to head the Interstate Commerce Commission to accelerate railroad and trucking deregulation.) Finally, the Office of Management and Budget, as part of the Executive Office of the President, has review powers over most regulatory initiatives.

5. To be sure, other agents responsible for regulatory policy could also be held politically accountable for their actions.

6. For example, although he was upset by the steel companies' decision to raise prices, President Kennedy was concerned that the public might perceive him as too quick to intervene in the private economy; see Reeves (1993, ch. 27).

7. See Campbell and Mann (1992) for a survey.

8. Peltzman (1992); Niskanen (1975).

U.S. economy can be measured in a variety of ways. We first considered using a measure of the intensity of regulation—its net social cost—but we were unable to obtain comprehensive estimates of the social costs and benefits of most regulatory programs, especially social regulatory programs, for the entire 1900–92 period. A measure based on the number of pages in the *Federal Register* was rejected because the *Federal Register* includes notices, corrections, blank pages, and other material that cause serious measurement problems.

Because federal regulation is enforced by agencies with regulatory responsibilities, the simplest measure is the number of such enforcement agencies. This measure, however, captures only changes in the presence, not in the intensity, of regulation. A better measure, the total number of federal agency employees assigned to regulatory tasks, captures both. That is, stronger or more lax enforcement of an existing regulation will usually result in a change in the number of employees assigned to regulatory tasks.⁹ As suggestive evidence, we found that firms' compliance costs with Environmental Protection Agency (EPA) regulations were positively and statistically significantly related to the number of EPA employees during the 1972–90 period, for which data are available. As another example, the Federal Communications Commission plans to hire several hundred employees for its cable monitoring program in the wake of cable television reregulation.

Another possible measure is federal agency spending on regulatory tasks. But this measure could simply be capturing changes in facilities and real wages for an existing work force with a fixed set of regulatory responsibilities rather than changes in regulation per se. A quite different measure of regulation would be the percentage of U.S. gross national product by industry that is subject to economic and social regulation. This approach, however, also fails to capture changes in the intensity of regulation, especially for social regulation. For example, most industries were subject to some form of federal environmental regulation by the early 1960s. What has changed since then is the stringency and extent of environmental regulation. An additional potential measurement problem arises, especially for economic regula-

9. Because reductions in force can be difficult to effect in the short run, this measure could be sticky. Our analysis, however, gives presidents sufficient time to lower regulatory employment.

tion, when a regulated industry is partially deregulated (for example, railroads have considerable, but not complete, price flexibility).

Of the possible measures, the best available is clearly the number of federal agency employees assigned to regulatory tasks.¹⁰ The appendix lists all relevant federal agencies for which we tabulated employment and budget data. Only employees who performed regulatory functions were counted; the agencies' nonregulatory tasks were excluded.

We classify regulatory activities into two categories: economic and social. We define *economic* regulation as the control of rates and entry conditions in a given market. *Social* regulation is defined as those activities of the federal government designed to control externalities or exposures that imperil human health and safety. These include the regulation of pharmaceuticals, workplace safety, product safety, and discharges of pollutants into the environment.¹¹ We do not include all activities of the government that affect social conditions, such as equal employment opportunity activities of various agencies, the Internal Revenue Service, educational programs, drug rehabilitation programs, and the like. In some instances, judgments had to be made, but tests indicated that, in general, our findings were not sensitive to them.¹² The employees from all the social regulatory agencies and from all the economic regulatory agencies were summed separately to form one variable for each type of regulation. Table 1 summarizes the primary regulatory responsibilities and employment levels for the largest agencies since 1948.

Figure 1 shows the evolution of social and economic regulatory employment from 1896 to 1992 based on our construction of the two employment variables for social and economic regulatory agencies.¹³ These measures

10. This measure can be criticized because it does not capture federally mandated regulatory activity carried out by the states. Most of this regulatory activity has occurred only during the past decade or so, however, and is small compared with the federal regulatory effort. State elections and regulatory policy could be analyzed, but that is beyond the scope of this paper.

11. Our classifications usually followed the Center for the Study of American Business, *Directory of Federal Regulatory Agencies* (St. Louis, various years), for the post-World War II period.

12. For example, it could be argued that some of the agricultural agencies currently classified as social regulatory agencies actually serve a major economic regulatory function by influencing entry. Reclassifying these agencies as economic regulatory agencies, however, does not materially affect our findings.

13. The employment data represent full-time equivalent workers.

Table 1. Largest Regulatory Agencies since 1948: Primary Responsibilities and Regulatory Employment

<i>Dates^a</i>	<i>Primary responsibilities</i>	<i>Peak employment (year)</i>	<i>1992 employment (estimated)</i>
Social Regulation			
1948–72	<i>Agricultural Marketing Service (AMS)</i> Inspection, grading, and standardization of agricultural products	13,191 (1971)	3,440
1948–77	<i>Animal and Plant Health Inspection Service (APHIS)</i> Inspection and quarantine of animals and plants for diseases and pests	15,026 (1973)	6,075
1949–64	<i>Bureau of Alcohol, Tobacco, and Firearms (BATF)</i> Regulation of lawful activities relating to distilled spirits, beer, wine and nonbeverage alcohol products, tobacco, firearms, and explosives	4,578 (1953)	4,202
1948–92	<i>Coast Guard (CG)</i> Marine safety; marine environmental protection; enforcement of fisheries laws	13,849 (1973)	12,906
1971–92	<i>Environmental Protection Agency (EPA)</i> Pollution abatement, control, and compliance activities for air, water quality, drinking water, hazardous waste, pesticides, radiation, and toxic substances	17,541 (1992)	17,541
1948	<i>Employment Standards Administration (ESA)</i> Enforcement of wage and hour standards; federal contractor equal employment opportunity	3,417 (1979)	2,169
1942–53	standards enforcement; federal programs for workers' compensation		
1948–51	<i>Federal Aviation Administration (FAA)</i> Maintain national aviation system; ensure safety of aircraft, airports, and navigational devices	6,990 (1973)	6,482
1954–55			
1958–81			
1992			

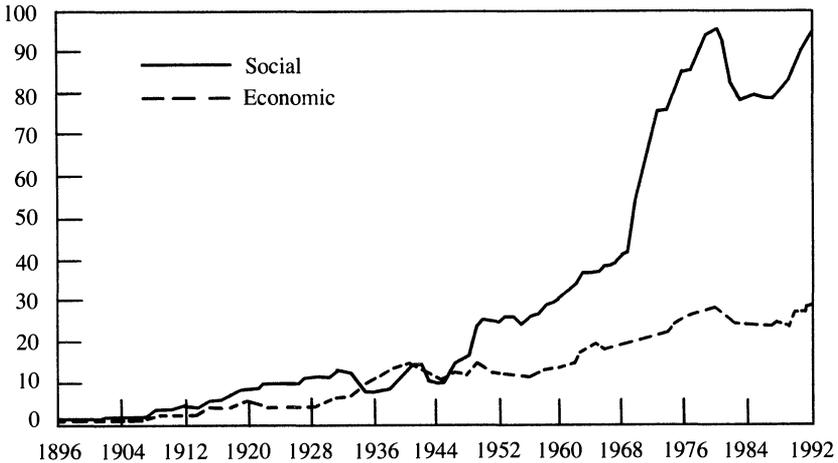
<i>Dates^a</i>	<i>Primary responsibilities</i>	<i>Peak employment (year)</i>	<i>1992 employment (estimated)</i>
	<i>Food and Drug Administration (FDA)</i>		
1965–70	Administer laws concerning misbranded and adulterated foods, drugs, human biologics, medical devices, cosmetics, and man-made sources of radiation	8,890 (1992)	8,890
1973–92			
	<i>Food Safety and Inspection Service (FSIS)</i>		
1978–92	Ensures meat and poultry products are wholesome, unadulterated, and properly labeled and packaged	13,198 (1979)	9,552
Economic regulation			
	<i>Interstate Commerce Commission (ICC)</i>		
1948–75	Regulation of interstate surface transportation	2,413 (1963)	635
1977–78			
	<i>Patent and Trademark Office (PTO)</i>		
1948–92	Supervise patent and trademark processes	5,320 (1992)	5,320
	<i>Federal Communications Commission (FCC)</i>		
1948–68	Licenses broadcasting and regulates service offerings, facilities, rates, and practices of common carriers; licenses other radio services (aviation, marine, microwave, amateur, etc.)	2,216 (1980)	1,782
1970–82			
1984–85			
	<i>Securities and Exchange Commission (SEC)</i>		
1948–65	Prevention and suppression of fraud; supervision and regulation of securities markets; investment management regulation	2,643 (1992)	2,643
1969			
1976			
1979–92			
	<i>Federal Deposit Insurance Corporation (FDIC)</i>		
1948–50	Protect bank depositors; foster sound banking practices	5,814 (1992)	5,814
1966–92			
	<i>Federal Reserve Banks (FRB)</i>		
1951–62	Carry out monetary policy; regulate financial institutions	2,477 (1992)	2,477
1983			
1986–92			
	<i>Comptroller of the Currency (COC)</i>		
1963–92	Regulate national banks	3,650 (1992)	3,650

Sources: Information concerning the agencies was compiled by the authors using data from the *Budget of the United States Government*, various fiscal years, 1922–92 (for 1921–86 specifically from the data in the budget headed “Estimates of Appropriations Required for the Service of the Fiscal Year Ending June 30, _____”) and from the Center for the Study of American Business, Directory of Federal Regulatory Agencies, St. Louis (reprinted with the permission of the Center for the Study of American Business, Washington University, St. Louis).

a. Dates refer to the period when the regulatory agency was among the top five social or economic regulatory agencies for regulatory employment.

Figure 1. Federal Regulatory Employment

Employment (thousands)



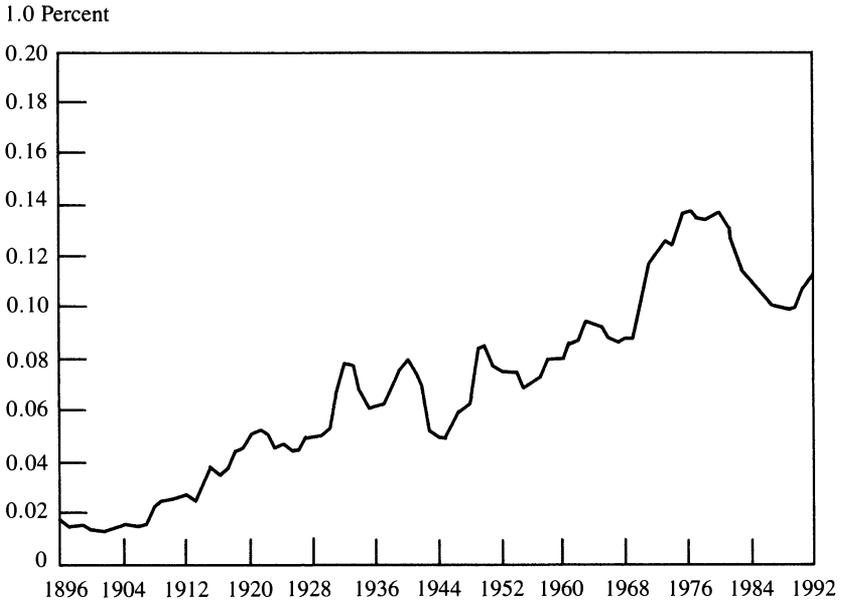
Source: See table 1.

appear to conform to intuition in characterizing changes in the presence and intensity of economic and social regulation in the U.S. economy during this period. In the 1960s, following steady but cyclical growth for the first half of the century, social regulation increased dramatically, interrupted only by a decline during the Reagan administration. Economic regulation has increased cyclically over time, but its growth during the latter part of the century has been meager compared with the growth of social regulation.¹⁴ As shown in figure 2, federal regulatory employment in general has accounted for an increasing share of civilian employment. We now turn to the political consequences of this growth.

Model Specification

When voters are asked when they make up their minds whom to support in a presidential election, some claim to have decided four

14. Although implementing deregulation may initially require an increase in regulatory employment, this increase will be temporary, and regulatory employment will fall, as, for example, the figure shows for economic regulatory employment during the 1980s. The rebound in economic regulatory employment during the past few years is attributable chiefly to increases at the Federal Deposit Insurance Corporation, the Securities and Exchange Commission, and the Patent and Trademark Office.

Figure 2. Regulatory Employment as a Percentage of Civilian Employment

Source: See table 1.

years before an election, some in the voting booth. That makes it hard to decide when voters might be influenced by particular economic and political variables. Even if voters were to make up their minds in a predictable fashion, they might not recognize the influence of particular economic and political events on their decisions until long after the events have occurred.

Because regulatory employment data are available only on an annual basis, we used annual data for all the economic variables as well. Our initial approach was to specify and estimate separately one-year, two-year, three-year, and four-year lags for the variables and then investigate “recognition lags.”¹⁵ We found that the best statistical fits for the model were obtained by using a one-year recognition lag for the regu-

15. As an example, a two-year lag for changes in government spending for the 1992 election specifies the effect of government spending as the change in government spending from 1990 to 1992. The motivation for recognition lags is that elections are held before a calendar year is finished and that voters may not immediately feel or respond to the effects of policy changes.

latory employment variables. Thus, for example, the first lag for social regulatory employment for the 1992 election specifies the variable as the change in social regulatory employment from 1990 to 1991, the second lag is from 1989 to 1991, and the third lag is from 1988 to 1991. We did not find that similar recognition lags for the more visible macroeconomic variables improved the model's statistical fit. But, to maintain consistency with the regulatory variables, their first lag for the 1992 election, for example, specifies a variable's change from 1990 to 1992, the second lag is from 1989 to 1992, and the third lag is from 1988 to 1992.¹⁶

The coefficients of the regulatory employment variables reflect the influence on voters of the direction of a president's regulatory policy. They represent estimates of the mean voter's perception of the desirability of more regulation.

Besides the regulatory employment variables, our presidential voting model includes government spending, macroeconomic variables, and political variables. Peltzman argues that because federal fiscal systems are progressive and voters are wealthier than nonvoters, the change in government spending should have a negative effect on an incumbent party's vote share.¹⁷ For the macroeconomic variables, we use the inflation rate, which should have a negative effect, and disposable personal income, which should have a positive effect.¹⁸ For the political

16. As in the case of Peltzman (1992), we ran into degrees-of-freedom difficulties when a fully distributed lag structure was used. Nonetheless, the procedure produces consistent parameter estimates, and *F*-tests indicate that additional lags added little information. In all the estimations, the economic variables are specified as the difference in logs, so their coefficients should be interpreted as capturing the effect of a 1 percent change in the variable on votes for the incumbent party's candidate (expressed in percentage points). Use of alternative functional forms (for example, logit, which controls for the fact that the dependent variable is bounded between zero and one, and log-linear), did not affect the findings.

17. Peltzman (1992). In addition, because government spending frequently responds to narrow constituency interests (such as pork-barrel spending), it should be viewed by voters in general as adverse to their interests. National defense expenditures during wartime are an obvious exception. Therefore, following Peltzman, the government spending variable was smoothed to eliminate temporary spending surges during wars. The smoothed and unsmoothed variables actually produced similar results. In general, the change in government spending poses fewer specification difficulties than the change in tax rates in capturing the political effect of fiscal policy.

18. Results were not sensitive to whether we used the change in inflation or its level at the time of the election or whether we used disposable or total income.

variables, we include the incumbent party's vote share in the previous presidential election, which should have a positive effect, an incumbent party dummy, an incumbent candidate dummy, and preference dummies for the incumbent party's candidate, which capture unmeasured candidate characteristics. The dummies are arguably of indeterminate a priori sign.

Findings

Because initial estimations revealed a statistically significant change in the voting model's parameters shortly following the Second World War, we estimated separate presidential voting models for 1900–48 and 1952–92.¹⁹ We first estimated the presidential voting model using party shares of the presidential vote at the state level for the 1952–92 presidential elections.²⁰ We initially used state dummies to capture fixed effects and allowed personal disposable income to vary by state. This specification did not produce any perceptible statistical improvements over a simpler specification that eliminated state dummies and used national values for the macroeconomic variables.²¹ Evidently, the vote share from the previous election captured most of the influences from variation across states.²²

19. We made a thorough investigation of the parameter regime shift and found that the earliest indication of a statistically significant shift occurred following the Second World War and persisted to the present.

20. Previous presidential voting models are also estimated with state data; see, for example, Peltzman (1992). The dependent variable, the incumbent party's share of the presidential vote, is constructed using vote shares of all parties, not just the Republicans and Democrats. The results were not particularly affected when we included a third party dummy variable or when we restricted the construction of the dependent variable to the two major parties. The third party dummy was activated if a third party candidate achieved a threshold share (for example, 10 percent). Because the dummy undoubtedly suffers from endogeneity bias, which we could not eliminate because of an absence of good instruments, we omitted it in our final estimations.

21. Fixed effects were captured using two different approaches. One specified dummies to capture incumbent preferences by state; the other specified dummies as *party* preferences by state by specifying dummies for Democratic incumbent presidents. In either case, the adjusted R^2 fell by roughly 10 percent when fixed effects were included. Peltzman (1992) argues that voters ignore the difference between state and national income growth in presidential elections and thus respond to changes in national income.

22. We calculated correlation coefficients for the states' vote shares and found that some states' vote shares, usually within a geographic region, were highly correlated, indicating that estimated t -statistics would be overstated. When we ignored all the

The results for 1952–92, presented in table 2, indicate that changes in regulatory policy do influence presidential vote shares. Growth in social regulatory employment increases the incumbent party's vote share in the subsequent election, while growth in economic regulatory employment decreases it. Although these effects of regulation diminish as the lag is extended, they are always highly statistically significant.²³ The quantitative effect of regulatory policy appears to be large. For the first lag, a 1 percent increase in social regulatory employment raises an incumbent party's vote share by 0.93 percentage point (the absolute value of the average change in social employment for this lag is 5.2 percent), while a 1 percent increase in economic regulatory employment lowers it by 0.78 percentage point (the absolute value of the average change in economic employment for this lag is 4.9 percent).²⁴ The

information from state variation, however, and estimated an aggregate time series model based on national data, estimated parameters were still the same sign and order of magnitude and highly statistically significant. Thus, the use of state level data does not give a misleading impression of the statistical precision of our estimates. Finally, the presence of serial correlation was tested using the aggregate model. A Durbin *h*-test, accounting for the inclusion of a lagged dependent variable, indicated that the presence of serial correlation could be rejected.

23. Each regulatory employment coefficient's magnitude and statistical significance was not particularly affected when the other regulatory employment variable was dropped from the specification.

24. A more general specification indicated that the marginal effect of a change in regulatory employment declined for changes greater than 5 percent, but the coefficients in this specification had fairly low statistical precision. The findings were not changed when we specified regulatory employment as a share of civilian federal employment, total government employment, or total U.S. nonagricultural employment. We also stress that these findings persisted throughout the sample period. For example, it might be argued that the public did not begin to become dissatisfied with economic regulation until sometime during the 1960s. But we found that the parameter estimate (standard error) for economic regulatory employment was -0.75 (0.16) during the 1952–60 period and was -0.80 (0.12) during the 1964–92 period. Similarly, although there was a huge spike in social regulatory employment during the 1968–80 period, the coefficient for social regulatory employment during the 1952–60 period turned out to be slightly larger than the coefficient for the 1964–92 period.

Finally, one should exercise caution when trying to infer estimates of different lags from the estimates reported here. For example, one might try to calculate the impact of the change in regulatory policy from the third-year lag to the second-year lag on election outcomes ($t-3$ to $t-2$) by subtracting the first two estimates of lagged variables ($t-2$ to $t-1$) and ($t-3$ to $t-1$) reported here. A more appropriate procedure is to estimate coefficients directly from a conventional distributed lag specification; that is, the lagged regulatory variables would be specified as ($t-2$ to $t-1$), ($t-3$ to $t-2$), and ($t-4$ to $t-3$). We

influence of regulatory policy performance on election outcomes is discussed below.

A skeptic might object that, although voters are likely to be aware of changes in inflation and income preceding an election, they are not usually aware of the precise magnitude of changes in federal regulatory employment. Certainly. But, as in the case of government spending, voters undoubtedly have a qualitative sense of the direction in which a government is going. That is, a growing burden of regulation will attract public attention; at the very least, the public is likely to know what priority an administration places on regulatory policy. In addition, the top five federal economic and social regulatory agencies typically account for a large fraction of total economic and social regulatory employment at any given point,²⁵ and our findings were virtually unaffected when we used these agencies (instead of all the agencies) to construct the regulatory employment variables.²⁶ In all likelihood, our results reflect voters' response to the (perceived) effects on them of a change in government intervention in their market and nonmarket transactions. As discussed below, evidence from public opinion polls suggests that the public has strong feelings about this type of government intervention.

The estimates of the effect of the other variables are broadly consistent with previous results in the literature. Our results, for example, corroborate Peltzman's finding that voters penalize incumbents for expansions in government spending.²⁷ The macroeconomic and political variables have plausible effects, with the most interesting finding being that voters' inherent preference for President George Bush in the 1992

found that this lag structure did not fit the data as well as the structure used here but that the more distant lags had the same sign but smaller magnitudes than the initial lag.

25. For example, the top five federal economic regulatory agencies frequently included the Interstate Commerce Commission, the Federal Communications Commission, the Federal Deposit Insurance Corporation, the Comptroller of the Currency, and the Patent and Trademark Office. The top five social regulatory agencies frequently included the EPA, the Federal Aviation Administration, the Food and Drug Administration, the Animal and Plant Health Inspection Service, and Consumer (Agricultural) Marketing Service.

26. Although we took considerable care to find all federal economic and social regulatory agencies and to classify them properly, this finding suggests that our estimates are not likely to be affected if we missed or even misclassified some of the smaller agencies.

27. Peltzman (1992).

Table 2. Estimation Results, 1952–92

Variable	First lag coefficient ^a	Second lag coefficient ^b	Third lag coefficient ^c
Preference dummy	0.0167	0.0838	0.1365
Bush 1992	(0.0423)	(0.0407)	(0.0396)
Preference dummy			
other incumbent	0.1340	0.2062	0.3296
party candidates	(0.0474)	(0.0427)	(0.0391)
Growth in real per capita			
government spending	-0.2620	-0.2591	-0.1772
less regulatory spending	(0.0642)	(0.0565)	(0.0605)
Growth in employment in			
social regulatory	0.9342	0.2194	0.1740
agencies	(0.1096)	(0.0327)	(0.0302)
Growth in employment in			
economic regulatory	-0.7829	-0.1918	-0.2063
agencies	(0.0974)	(0.0490)	(0.0473)
Growth in real per			
capita disposable	1.621	1.046	0.0056
personal income	(0.296)	(0.155)	(0.1169)
Change in	-0.0869	-0.1887	-0.4487
inflation rate	(0.1684)	(0.0773)	(0.0597)
Share of incumbent			
party in preceding	0.4652	0.4519	0.4102
election	(0.0662)	(0.0671)	(0.0674)
Incumbent party			
dummy (1 for Democrat,	0.0104	-0.0443	-0.0429
0 for Republican)	(0.0109)	(0.0100)	(0.0112)
Incumbent dummy			
(1 if incumbent party			
candidate is the			
incumbent president,	0.0958	0.0947	0.1101
0 otherwise)	(0.0110)	(0.0090)	(0.0103)
R^2	0.56	0.56	0.50

Sources: Data for voting shares from 1900 to 1972 come from Dean W. Burnham, Jerome M. Clubb, and William Flanigan, *State-Level Presidential Election Data for the United States, 1824–1972*, computer file (Ann Arbor: Inter-university Consortium for Political and Social Research, no date); for 1976–84, from *Congressional Quarterly's Guide to U.S. Elections*, 2d ed. (Washington: Congressional Quarterly, 1985); for 1988 from *America Votes*, vol. 20 (Washington: Congressional Quarterly, 1992); and for 1992 from *The Elections of 1992*, edited by Michael Nelson (Washington: CQ Press, 1993). Government spending and disposable personal income are from the Bureau of Economic Analysis, Commerce Department. Regulatory spending and employment are from the sources listed in table 1. Inflation is from the Bureau of Labor Statistics, Department of Labor.

Note: Dependent variable is the incumbent party's share of the presidential vote. Number of observations = 549. Heteroskedastic-consistent standard errors in parentheses.

- One-year recognition lag for regulatory variables ($t-2$ to $t-1$), two-year lag for other variables ($t-2$ to t).
- Lag for regulatory variables ($t-3$ to $t-1$), lag for other variables ($t-3$ to t).
- Lag for regulatory variables ($t-4$ to $t-1$), lag for other variables ($t-4$ to t).

election was considerably lower than their inherent preferences for all previous incumbent party candidates.²⁸

With the exception of some additional macroeconomic variables, we used the same specification to explain incumbent party vote shares for the 1900–48 elections.²⁹ The parameter estimates reported in table 3 again indicate that changes in federal regulatory policy influence presidential vote shares. But the signs for the regulatory variables are reversed for the 1900–48 elections: social regulatory employment has a negative effect, economic regulatory employment a positive effect. The quantitative effect of regulatory policy is also important for at least the first lag but falls sharply by the second, despite remaining statistically significant. Nonetheless, voters have apparently had some influence on regulatory policy in the United States for nearly a century.³⁰

The apparent change in voters' perception of the desirability of economic and social regulation before and after World War II is not particularly surprising. During the early part of the twentieth century, a great deal of attention was focused on the power of the "trusts." This was the period in which the reach of the antitrust laws was being defined by cases against Standard Oil, American Tobacco, the meat packers, the sugar refiners, manufacturers of vitreous pottery, and various railroad combinations. It was not until 1927 that many of these cases and issues were settled.

In the 1930s attention turned to the need for massive government intervention to stabilize the economy. The Gallup and Roper polls even found that a majority or plurality of those surveyed in the late 1930s

28. Most previous presidential voting models have not attempted to capture the strength or weakness of the opposition candidate. To account for this effect, we estimated a model that included the opponent's share of the primary vote for states that had a primary. The inclusion of this variable did not affect the parameter estimates for the other variables. Nonetheless, because its parameter estimate is likely to be biased (an opponent's strength is influenced by the strength of the incumbent) and because good instruments are not available, we did not include it in the basic specification reported above.

29. Peltzman (1992) introduced macroeconomic "surprises" in consumption and inflation. These surprises were statistically insignificant for the 1952–92 sample but did have statistically significant effects for the 1900–48 sample.

30. A common criticism of time series findings is that they actually reflect contemporaneous correlation—for example, that incumbents are frequently reelected and regulatory employment has grown through time. The varying cycles in the regulatory employment variables and their different effects on vote shares suggest, however, that the overall findings do not simply reflect this type of correlation.

Table 3. Estimation Results, 1900–48

<i>Variable</i>	<i>First lag coefficient^a</i>	<i>Second lag coefficient^b</i>	<i>Third lag coefficient^c</i>
Constant	0.3509 (0.0354)	0.0360 (0.0202)	0.1125 (0.0214)
Growth in real per capita government spending less regulatory spending	-0.1927 (0.0319)	-0.2125 (0.0348)	-0.0328 (0.0255)
Growth in employment in social regulatory agencies	-0.4816 (0.0710)	-0.0573 (0.0298)	-0.0682 (0.0500)
Growth in employment in economic regulatory agencies	0.7538 (0.0641)	0.0904 (0.0203)	0.0331 (0.0201)
Growth in real per capita disposable personal income	0.8564 (0.0432)	0.3165 (0.0370)	0.2593 (0.0376)
Consumption surprise ^d	4.021 (0.300)	0.7348 (0.0653)	0.0106 (0.0942)
Change in inflation rate	-2.062 (0.126)	-0.2367 (0.0459)	-0.3481 (0.0584)
Inflation surprise ^e	-0.0057 (0.0015)	-0.0056 (0.0012)	-0.0022 (0.0011)
Share of incumbent party in preceding election	0.7610 (0.0336)	0.8062 (0.0328)	0.7173 (0.0389)
Incumbent party dummy (1 for Democrat, 0 for Republican)	0.1667 (0.0123)	0.0486 (0.0190)	0.1832 (0.0128)
Incumbent dummy (1 if incumbent party candidate is the incumbent president, 0 otherwise)	-0.5659 (0.0369)	0.0150 (0.0172)	-0.1665 (0.0139)
R^2	.75	.71	.75
Number of observations	567	567	522

Sources: Consumption is from the Bureau of Economic Analysis, Commerce Department, and unpublished estimates provided by Stanley Lebergott, Department of Economics, Wesleyan University. The sources for the other variables are the same as those given in table 2.

Notes: Dependent variable is the incumbent party's share of the presidential vote. Heteroskedastic-consistent standard errors in parentheses.

a. One-year recognition lag for regulatory variables ($t-2$ to $t-1$), two-year lag for other variables ($t-2$ to t).

b. Lag for regulatory variables ($t-3$ to $t-1$), lag for other variables ($t-3$ to t).

c. Lag for regulatory variables ($t-4$ to $t-1$), lag for other variables ($t-4$ to t).

d. Consumption surprise is the residual from a first-order consumption autoregression.

e. Inflation surprise is the residual from a first-order inflation autoregression.

favored outright government *ownership* of industry.³¹ At the same time Gallup found that a majority favored a constitutional amendment giving the federal government “the power to regulate agriculture and industry” and that a plurality of respondents favored a requirement that the federal government license companies engaged in business in more than one state.³²

By the 1970s the public’s perception of regulation had changed. Large majorities responded affirmatively when asked by the Harris Poll if they thought that government “overregulates” business; however, a majority favored the continuation of antitrust policy.

There is little evidence of voter sentiment about health, safety, and the environment before World War II, perhaps because problems of economic stability and growth dominated the policy landscape. However, Page and Shapiro report that Gallup and Harris found that public support for automobile safety regulation and cigarette health warnings rose sharply in the mid-1960s.³³ The support for environmental policy rose in the early 1970s, fell somewhat in the late 1970s, then rose once more in the 1980s.

We pursued additional specifications to provide a sharper characterization of the findings. Estimating separate models for each decade and including state characteristics, such as growth in earnings and the output shares of manufacturing and mining, provided little additional insight. But incorporating regional dummies revealed that regulatory policy had especially strong effects on an incumbent party’s vote share in southern states, as shown in table 4. Given their long-standing antipathy toward unions and other cartelizing institutions, it is not surprising that southern voters punish increases in economic regulatory employment during 1952–92 more than do voters in other regions. It is somewhat surprising, however, that increases in social regulatory employment bring greater political rewards in the South during this period. Compared with other members of Congress, southern legislators have generally shown little support for environmental and energy legislation, according to the League of Conservation Voters. But the league’s rankings for southern lawmakers have been steadily rising for the past twenty

31. See Shapiro and Gilroy (1984b).

32. See Shapiro and Gilroy (1984a).

33. Page and Shapiro (1992).

Table 4. Estimation Results, 1952–92, with Regional Effects

<i>Variable</i>	<i>Coefficient</i>
Preference dummy	-0.0197
Bush 1992	(0.0350)
Preference dummy other incumbent party candidates	0.0962
	(0.0409)
Growth in real per capita government spending less regulatory spending	-0.2778
	(0.0542)
Growth in employment in social regulatory agencies (southern region)	1.774
	(0.144)
Growth in employment in social regulatory agencies (other regions)	0.6164
	(0.0896)
Growth in employment in economic regulatory agencies (southern region)	-1.8105
	(0.1627)
Growth in employment in economic regulatory agencies (other regions)	-0.3703
	(0.0852)
Growth in real per capita disposable personal income	1.664
	(0.270)
Change in inflation rate	-0.0819
	(0.1571)
Share of incumbent party in preceding election	0.5225
	(0.0537)
Incumbent party dummy (1 for Democrat, 0 for Republican)	0.0149
	(0.0095)
Incumbent dummy (1 if incumbent party candidate is the incumbent president, 0 otherwise)	0.0999
	(0.0101)

Sources: See table 2.

Note: Dependent variable is the incumbent party's share of the presidential vote.

$R^2 = 0.65$. Number of observations = 549. Heteroskedastic-consistent standard errors are in parentheses.

years.³⁴ Apparently, as the South grows, southerners' attitudes toward social regulatory policy are changing, as are their votes for presidential performance in this area.

Finally we estimated models using alternative measures of the extent of social and economic regulation and greater disaggregation of the employment measures. The results were essentially unaffected when the budget of regulatory agencies, rather than their employment levels,

34. According to the National Environmental Scorecard put out annually by the League of Conservation Voters in Washington, the rankings of southern senators on key environmental and energy votes are 24.7 (1971–72), 34.1 (1981), and 40.8 (1991), out of a maximum of 100. The rankings of southern representatives are 23.6 (1971), 33.4 (1981), and 40.7 (1991).

was used,³⁵ but the number of regulatory agencies performed poorly, as we expected.³⁶ We also subdivided our census of economic regulatory agencies into finance and banking, industry-specific, and general business and of social regulatory agencies into energy, environment, job safety and other working conditions, and consumer safety and health, based on categories devised by the Center for the Study of American Business. But this analysis did not reveal that the findings were driven by employment at any particular group of agencies or that, in general, one group's effect was at odds with other groups' effects. In addition we estimated models with just one group of regulatory agencies at a time and obtained parameter estimates that tended to cluster around the estimated parameter based on all the agencies. For example, during 1952–92 the estimated coefficient (standard error in parentheses) for trade-related economic regulatory employment for the first lag was -0.811 (0.098); for industry-specific economic regulatory agencies, the coefficient was -1.62 (0.118), and so on. The estimate for environmental social regulatory employment was 0.332 (0.040); for agencies related to job safety and other working conditions, it was 1.82 (0.292), and so on.

Interpreting the Empirical Findings

The regulatory employment coefficients indicate voter reactions to presidents' regulatory policy initiatives. We now attempt to provide an interpretation of these reactions by discussing the signs of the regulatory employment coefficients in the context of the two standard economic theories of regulation, the public interest theory and the Chicago (capture) theory, and theories closely aligned with them.³⁷ Our results by

35. The parameter estimates (and standard errors) for the growth in economic regulatory budgets for 1952–92 are -0.770 (0.067) for the first lag, -0.216 (0.048) for the second lag, and -0.211 (0.049) for the third lag. The corresponding estimates for social regulatory budgets are 0.776 (0.084), 0.101 (0.026), and 0.160 (0.029) for the same period.

36. Use of this variable to measure the extent of regulation yielded unstable parameter estimates and lowered the model's overall statistical fit.

37. Noll (1989b) points out that there are important political theories of regulation, including social choice and Downsian theory, but these are difficult to analyze empirically.

themselves are not sufficient to provide a thorough statistical test of these theories. The actual changes in regulatory employment and the welfare effects of regulatory policy must also be considered in such an evaluation. One thing, however, is certain: presidents do not maximize votes with respect to regulatory policy, other influences constant, because the regulatory employment coefficients are statistically significantly different from zero.

The Public Interest Theory

The public interest theory asserts that the objective of regulatory policy is to maximize economic welfare (that is, the sum of consumer and producer surplus). According to this theory, regulation exists to correct some form of market failure; deregulation is pursued when the costs of regulation exceed the transactions costs of repealing it plus the costs of the remaining market failure.³⁸

Beginning with 1952–92, Winston concludes that economic deregulation during the 1970s and 1980s has produced billions of dollars in benefits to consumers and small but positive benefits to producers, a finding with which a majority of the public now apparently concurs.³⁹ Although empirical evidence regarding the costs of regulation began to accumulate during the 1950s and 1960s, it is not clear whether the public then perceived regulation as costly. (Recall that public opinion polls did reflect this perception by the 1970s.) Although there is not much empirical evidence on the effects of economic regulation during 1900–48, it is possible that economic regulation, regardless of its actual effects, was perceived favorably, as suggested by public opinion polls—“stabilizing” otherwise volatile prices and thus benefiting consumers. It is not clear, however, whether it was perceived as benefiting producers.⁴⁰ Evidence concerning the welfare effects of social regula-

38. Noll (1989a).

39. Winston (1993).

40. Hilton (1966), for example, cites scholarly writings that claim the Interstate Commerce Act of 1887 was an appropriate response to the conditions that brought it forth. It is possible that the courts confined regulatory interventions to markets involving “public necessities” in which there was a possibility of market failure (monopoly). Glaeser (1957) reviews the Supreme Court’s decisions in the 1920s and 1930s overturning state statutes that would have regulated commodities such as gasoline and ice. Thus, the courts may have prevented the extension of regulation and capture to such an extent

tion during 1952–92 is not entirely conclusive, but the conventional view, which the public may also share, is that it has produced benefits to consumers (this appears to be consistent with public opinion polls) at an offsetting cost to producers with, at best, mild positive effects.⁴¹ During 1900–48, a period of much more unstable macroeconomic performance, higher general growth, but lower per capita income, social regulation was likely to be perceived as harming consumers and producers.⁴²

Consistent with our coefficient's sign, the public interest theory would predict that a change in economic regulation (as measured by economic regulatory employment) during 1952–92 would have a negative effect on the incumbent party's vote share (that is, voters disapproved of economic regulation because of its costs to consumers and producers). The public interest theory's prediction that a change in economic regulation during 1900–48 could have either a positive or a negligible effect (depending on producers' welfare) on the incumbent party's vote share overlaps with our finding. The theory's prediction

that the public believed that economic regulation constrained monopoly power and contributed to the public welfare.

41. Reviewing the empirical literature on social and economic regulation, Hahn and Hird (1991) find that the estimates on the costs and benefits of social regulation are very uncertain. As a result, they conclude that the annual net benefits of social regulation could be as low as negative \$65 billion or as high as \$104 billion (in 1988 dollars). Their best estimate is that the net benefits are zero, which—given increasing marginal control costs—suggests that social regulation has probably been extended too far. However, if the average voter believes that much of the estimated annual costs of \$78 billion to \$107 billion (in 1988 dollars) is borne by the owners of capital, he or she may feel that social regulation has been the source of considerable personal benefit.

42. Before World War II, there was little apparent concern about environment, health, and safety regulation. Food and drug regulation expanded after World War I, but otherwise there was little interest in social regulation. Our search of public opinion surveys for the 1935–46 period revealed no entries under environment or safety regulation; see Cantril (1951). The principal interest in mining, traditionally a very unsafe sector, lay in whether the government should nationalize it or regulate it. Economic regulation of mining and financial markets proved to be a relatively popular alternative, again suggesting that politicians may have found that increases in economic regulation would contribute to their vote shares. To be sure, Upton Sinclair's *The Jungle*, which depicted horrific sanitary conditions in Chicago slaughterhouses, was an immediate best-seller upon publication in 1906 and was partly responsible for the passage of the Pure Food and Drug Act. However, as Garraty (1991) notes, President Theodore Roosevelt was never deeply interested in pure food legislation and considered the chief chemist of the Department of Agriculture and the leader of the fight for this reform something of a crank.

that a change in social regulation during 1952–92 would have a negligible or small positive effect on the incumbent party's vote share is inconsistent, however, with our finding of a large positive effect of social regulation during this period. Finally, its prediction that a change in social regulation during 1900–48 would have a negative effect on the incumbent party's vote share is consistent with our finding.

The Populist Theory

A narrow characterization of the public interest theory, which we term a populist theory, is that regulatory policy does not reflect producer welfare but rather seeks solely to maximize consumer welfare. This theory's predictions are even more consistent with our coefficients' signs than are the public interest theory's predictions. It predicts that a change in economic regulation during 1952–92 would have a negative effect on the incumbent party's vote share (that is, voters disapprove of economic regulation because of its costs to consumers), but that a change in economic regulation during 1900–48 would have a positive effect on the incumbent party's vote share (that is, voters approve of economic regulation during this period because of its perceived benefits to consumers). In contrast with the public interest theory, and consistent with our findings, the populist theory unambiguously predicts that a change in social regulation during 1952–92 would have a positive effect on the incumbent party's vote share (that is, voters approve of social regulation despite its large costs), but that a change in social regulation during 1900–48 could have a negative effect on the incumbent party's vote share.

This populist interpretation of our coefficients is aligned with long-standing arguments that the government uses its coercive powers—regulatory policy is one of many instruments at its disposal—to redistribute wealth. What is surprising, however, is that this redistribution appears to benefit many instead of a well-organized few. This issue is addressed below. The populist interpretation could also explain the recent (apparent) divergence in regulatory policy, with economic deregulation occurring during the latter half of the 1980s, while social regulation has continued to grow. More generally, spurred by such agencies as the EPA and the Food and Drug Administration, where

current employment is at or near an all-time high (see table 1), the accelerated growth in social regulatory employment during the past century is aligned at an intuitive level with a populist perspective. The relatively slower growth in economic regulatory employment, where even peak agency employment—with the recent exception of the Federal Deposit Insurance Corporation and the Patent and Trademark Office—is not as high as it is at many social regulatory agencies, also conforms intuitively to this perspective.

The Chicago Theory

The Chicago theory posits that regulation is one policy instrument that politicians use to maximize their vote share. Regulation has nothing to do with social welfare considerations. Thus, for example, despite the obvious harm of trucking regulation to consumers, Moore concluded, through the lens of the Chicago theory, that the benefits of trucking regulation, in the form of votes and campaign contributions conferred on politicians by route owners and trucking labor were sufficiently powerful to offset the effects of efficiency losses borne by the general public.⁴³

The Chicago regulatory theory is typically applied to regulatory agencies and Congress, not to presidents. Nonetheless, a possible interpretation of this theory, as presented by Stigler,⁴⁴ suggests that any change in economic and social regulatory employment could have a positive effect on the incumbent party's vote share, a prediction that is inconsistent with the sign of some of our regulatory coefficients. But Peltzman's interpretation of the theory suggests that vote maximization could require either an increase or a decrease in regulation over its current level.⁴⁵ Thus, it is not possible to determine unambiguously whether our coefficients' signs are consistent with Peltzman's interpretation of the Chicago theory. What is clear, however, is that regulation has not been extended to the level that maximizes the incumbent party's vote share.

43. Moore (1978).

44. Stigler (1971).

45. Peltzman (1989).

Public Choice

A theory related to the Chicago theory, associated with public choice scholars, such as Buchanan and Tullock,⁴⁶ is that the coercive power of the state enables politicians to exploit regulatory policy solely for their benefit. According to this theory, trucking regulation, for example, would benefit route owners and labor only because politicians could not extract all the rents from regulation. Because rents can be appropriated in the form of votes, then, as with the Chicago theory, it is not possible to determine unambiguously whether our coefficients' signs are consistent with the public choice theory.

A Reassessment

Although the findings reported here are surprisingly supportive of a populist interpretation, it is possible to find in them some degree of support for the public interest, Chicago, and public choice interpretations. Nonetheless, the findings suggest that voters have revealed a preference for the regulatory policy that they thought would benefit them. Yet at times during the past century (as in the case of trucking regulation), regulatory policy clearly has been at variance with voter preferences.

In table 5, we show the degree to which political incumbents have gained or lost support from various aspects of their performance by estimating the contribution of changes in regulatory policy, government spending, the macroeconomy, and political variables to an incumbent party's vote share for each of the presidential elections in the 1952–92 period.⁴⁷ The calculations show that the effect of changes in either economic or social regulation preceding a presidential election is gen-

46. Buchanan and Tullock (1962).

47. Using the parameter estimates for the first lag, which captures the strongest effect of changes in regulation on vote shares, we multiplied each variable for a given election by its corresponding parameter. The contribution of the macroeconomic variables (inflation and income) and the political variables (previous election share and the dummies, excluding the constants) was summed. Some of the calculations should be interpreted with caution. For example, the contribution of the change in social regulatory employment for the 1972 election and the change in economic regulatory employment for the 1964 election represented the maximum values for these variables in the sample (15.6 percent and 13.2 percent, respectively).

Table 5. Predicted Effects on Incumbent Party's Share of the Presidential Vote
In percentage points

<i>Election</i>	<i>Social regulation</i>	<i>Economic regulation</i>	<i>Government spending</i>	<i>Macro-economic variables</i>	<i>Political variables</i>	<i>Margin of victory</i>
1952	-1.08	8.94	-6.02	1.76	24.26	-10.75
1956	-4.43	3.75	0.51	14.01	35.52	15.40
1960	6.09	-1.77	0.02	6.15	26.11	-0.17
1964	6.68	-10.43	-0.45	12.23	33.18	22.58
1968	1.37	-1.53	-3.48	8.33	28.41	-0.70
1972	14.63	-2.82	-2.07	9.40	30.16	23.16
1976	5.99	-7.76	-2.31	2.77	38.21	-2.10
1980	4.41	-1.26	-0.29	-9.20	33.66	-9.70
1984	-4.91	2.88	-1.42	11.18	33.48	18.21
1988	0.25	1.15	0.53	7.22	27.79	7.80
1992	4.00	-0.13	-0.89	-1.23	34.57	-5.50
Average effect during period (absolute value)	4.89	3.86	1.64	7.59	31.39	

Source: Authors' calculations, except for margin of victory, which came from the same sources as the voting shares data given in table 2.

erally greater than the effect of changes in government spending but often considerably less than the effect of macroeconomic and political influences.⁴⁸ It is also clear that incumbent party candidates have not routinely increased their vote share as a result of their performance in regulatory policy and government spending. How can this be explained?

Quite simply. Presidents derive utility from more than one source. Being reelected is one, but exercising their policy preferences (ideology) is clearly another.⁴⁹ As is clear from the table, presidents have a *portfolio* of policies that can be used to maximize their utility. Thus, in accordance with his own ideology, a president can shirk (that is, do or avoid doing things that cost him politically) on social regulation if he can make up for it politically with a strong macroeconomy and conventional political factors (President Ronald Reagan's reelection in 1984 is an example). Indeed, the table indicates a strong negative

48. The sum of the effects does not constitute a prediction of an incumbent party candidate's share because it does not include the constants.

49. There has been a spirited debate in the literature about the influence of ideology on legislative voting. See, for example, Peltzman (1984) and Kalt and Zupan (1984). For a more recent analysis that finds ideology has an influence but also emphasizes the role of expectations of a policy's effects, see Sheehan and Winston (1987).

correlation between economic and social regulatory political performance, suggesting that presidents politically trade off one regulatory area for another. As one might expect, the greatest instances of shirking by incumbent candidates occur when landslide elections seem certain (Dwight Eisenhower in 1956, Lyndon B. Johnson in 1964, Richard Nixon in 1972, and Reagan in 1984); less shirking occurs when an incumbent candidate's reelection is in doubt (Jimmy Carter in 1980, Bush in 1992). Extending these findings, we would argue that government spending has grown despite being politically costly because this cost is sufficiently small that it can be offset by other politically rewarding policies and factors.⁵⁰

The discouraging but not altogether surprising conclusion to be drawn from this table is that political factors are far more influential in presidential elections than are economic factors, especially regulatory policy, which, unlike macroeconomic performance, is primarily determined by an administration. Elections turn out to be a weak process for correcting "errors" in regulatory policy. Indeed, when we attempted to fit a model to explain the change in regulatory employment by the incumbent party as a function of the incumbent party's vote share in the previous election, lagged values of the regulatory employment variables and so on, we obtained poor statistical fits; in particular, the vote share in the previous election had no explanatory power.

Thus, although the regulatory coefficients appear to capture populist preferences, their magnitudes are apparently too *small* to force administrations to be particularly responsive to voters' regulatory interests. The high likelihood of shirking and, to a lesser extent, possible changes in voters' preferences make it extremely difficult to predict the course of regulatory policy over the short or even the medium term. For example, despite the political benefits from deregulation, cable television was reregulated in 1992, and there is a significant possibility that health services will soon be subject to price regulation.

50. This issue was most recently discussed by Peltzman (1992). His estimate of the political cost of government spending is only about a percentage point higher than our estimate. If presidents had a line-item veto, spending growth might possibly be slowed. Peltzman stresses the role of learning in state elections (that is, politicians are slowly becoming aware of the political costs of expanded budgets). Given that we found that spending growth has generated political costs for nearly a century, if presidential candidates are learning, they are learning very slowly.

Conclusion

George Stigler was convinced that it would be useful to have a single theory to explain all government economic policies, especially social and economic regulatory policy.⁵¹ Stigler, as recounted in a story by McCloskey, essentially espoused the theory that people get the policies they want.⁵² Our estimates of voters' preferences appear to offer him support, but because presidents are able to shirk, people do not always get the policies they want.

Presidential optimization with respect to a portfolio of policies and political factors subject to voter preferences *is*, in our view, a valid explanation for regulatory policy during the past century, but it obviously leads to considerable indeterminacy as to how regulatory policy will evolve, and it poses formidable problems for current and potentially new theories of regulation.⁵³ Nonetheless, the first objective of science is to explain a phenomenon—the explanation itself may suggest that prediction is not possible. For example, in this case, costly economic reregulation and new ill-advised regulations are always a real possibility. Educating the public about the economic effects of regulatory policy is still necessary. Time will tell whether the social payoff from such education will become large.

Appendix: Federal Agencies with Regulatory Responsibilities, 1896–1992

The following chart lists all relevant federal agencies for which we tabulated employment and budget data. Some agencies existed before their activities encompassed regulatory responsibilities. In addition,

51. Stigler (1981, p. 74).

52. McCloskey (1992, p. 689). The story concerned free trade. Stigler's position was "if people want free trade, they'll get it."

53. In addition to being inconsistent with many administrations' actual regulatory policy, the public interest and populist theories of regulation are inconsistent with empirical evidence finding that regulatory policy has often reduced welfare. The Chicago and public choice theories cannot be rescued by arguing that a political budget constraint prevents presidents from designing vote-maximizing regulatory policy because such policy hardly requires substantial resources of any kind. At the very least, the role of the executive branch should be incorporated in the theory of regulation.

regulatory responsibilities for a few agencies began before 1896 (the beginning of our sample.) Agencies are grouped together to indicate the succession of one agency by another; either some or all of its functions were taken over by the succeeding agency or the succeeding agency performed related regulatory functions. The first year in parentheses indicates when regulatory activities began; the second year, if included, indicates when they ceased. Only employees who performed regulatory functions were counted; the agency's nonregulatory tasks were excluded.

Social Regulation

Navigation and Steamboat Inspection (1896–1935)
 Bureau of Marine Inspection and Navigation (1936–41)
 Coast Guard (1942)

Bureau of Chemistry (1908–28)
 Food, Drug, and Insecticide Administration (1928–30)
 Food and Drug Administration (1931)

Bureau of Biological Survey (1911–39)
 Bureau of Fisheries (1911–39)
 Fish and Wildlife Service (1940)

Bureau of Mines (1911–73)
 Mining Enforcement and Safety Administration (1974–77)
 Mine Safety and Health Administration (1978)

Consumer and Marketing Service (1911–71)
 Packers and Stockyard Administration (1922)
 Agricultural Marketing Service (1972)
 Animal and Plant Health Inspection Service (1972)
 Federal Grain Inspection Service (1977)
 Food Safety and Inspection Service (1977)

Bureau of Prohibition (1919–33)
 Alcohol Beverage Unit, Justice (1934)
 Division of Taxes and Penalties, Justice (1935–37)
 Division of Bond and Spirits, Justice (1938–43)
 Bureau of Industrial Alcohol, Treasury (1930–31)
 Federal Alcohol Administration (1930–40)
 Alcohol and Tobacco Tax Regulatory Work, IRS (1947–71)
 Bureau of Alcohol, Tobacco, and Firearms (1972)

Wage and Labor Standards Administration (1919–69)

Workplace Standards Administration (1970)

Employment Standards Administration (1971)

Army Corps of Engineers (1921)

Petroleum Conservation (1929–32)

Petroleum Conservation (1935–41)

Petroleum Division (1942–46)

Oil and Gas Division (1947–48)

Petroleum Regulation (1981)

Restricting the Sale of Opium, Treasury (1915–19)

Bureau of Narcotics (1930–68)

Bureau of Narcotics and Dangerous Drugs (1969–72)

Drug Enforcement Agency (1973)

Civil Aeronautics Administration (1936–57)

Federal Aviation Agency (1958–66)

Federal Aviation Administration (1967)

National Labor Relations Board (1936)

Atomic Energy Commission (1956–74)

Nuclear Regulatory Commission (1975)

Labor-Management Services Administration (1960)

Equal Employment Opportunity Commission (1964)

Federal Highway Administration (1966)

Federal Railroad Administration (1967)

National Transportation Safety Board (1967)

Environmental Protection Agency (1970)

National Highway Traffic Safety Administration (1970)

Council on Environmental Quality (1971)

Occupational Safety and Health Review Commission (1972)

Consumer Product Safety Commission (1973)
Occupational Safety and Health Administration (1973)
Federal Energy Administration (1974–76)
Economic Regulatory Administration (1977)
Office of Surface Mining Reclamation and Enforcement (1978)
Architectural and Transportation Barriers Compliance Board (1982)
Federal Inspector for the Alaska Natural Gas Pipeline (1984)

Economic Regulation

Comptroller of the Currency (1896–1948)
Comptroller of the Currency (1963)
Copyright Office, Library of Congress (1896)
Interstate Commerce Commission (1896)
Patent and Trademark Office (1896)
Antitrust Division, Department of Justice (1904)
Wireless Communication, Department of Commerce (1912–26)
Federal Radio Commission (1927–27)
Radio Division, Department of Commerce (1928–31)
Radio Division, Federal Radio Commission (1932–33)
Federal Communications Commission (1934)
Federal Reserve System Board of Governors (1914)
Federal Reserve Banks (1915)
Federal Trade Commission (1916)
Tariff Commission (1917–1974)
International Trade Commission (1975)
Commodity Exchange Authority (1922–1973)
Commodity Futures Trading Commission (1974)
Federal Power Commission (1922–1976)
Federal Energy Regulatory Commission (1977)

Farm Credit Administration (1930)

Federal Deposit Insurance Corporation (1933)

Federal Home Loan Bank Board (1933)

Federal Savings and Loan Insurance Corporation (1935)

Securities and Exchange Commission (1935)

Supervision of Federal Credit Unions (1937–41)

Bureau of Federal Credit Unions (1942–69)

National Credit Union Administration (1970)

Civil Aeronautics Authority (1938–39)

Civil Aeronautics Board (1940–85)

International Trade Administration (1946)

National Wage Stabilization Board (1946–47)

Renegotiation Rebates, Department of Treasury (1948–48)

Renegotiation Board (1951–79)

Federal Maritime Commission (1962)

Cost Accounting Standards Board (1971–80)

Council on Wage and Price Stability (1975–81)

Federal Election Commission (1975)

Export Administration (1988)

Source: See table 1.

Comments and Discussion

Comment by William A. Niskanen: Winston and Crandall have conducted a valuable study of the popular vote for the president, the first (to my knowledge) to estimate the effects of changes in federal regulation. The study reflects their characteristically careful model specification and data preparation. The general model specification follows that first developed by Kramer and by Niskanen for tests based on aggregate time-series samples.¹ Voters are assumed to vote for or against the presidential candidate of the incumbent party, depending on various political, economic, fiscal, and (now) regulatory conditions during the past several years. Some of the model specification details are different from what I would have chosen, but the major results appear to be invariant to a range of variable definitions. The data are a combined cross-section, time-series sample of the type first used by Peltzman to study the popular vote for governors.² This type of sample provides many more sample points, permitting the testing of a wider range of hypotheses, but raises several issues concerning the use of national or state-specific data. As it turns out, the vote for president seems to depend more on national macroeconomic conditions than on conditions specific to the voter's state. In summary, this is a careful, innovative, empirical study of an important topic. I wish I had thought of it.

Most of the results are consistent with those of several earlier studies. The popular vote for the presidential candidate of the incumbent party

1. Kramer (1971); Niskanen (1979).

2. Peltzman (1987).

has been a strong positive function of the change in real per capita output (or income), a significant *negative* function of the change in real per capita federal spending (or tax revenues), and a negative (but somewhat unstable) function of the change in the inflation rate over the whole period since 1900. The incumbent president (other than Bush) had a significant advantage in the second half of this century, but the effect of the incumbent party's vote share in the previous election was stronger in the first half.

The major innovation in this study is to estimate the effects of changes in federal regulatory employment on the popular vote for president. For this commentator, the estimates of these effects are both surprising and implausibly large. For the elections from 1900 through 1948, increases in employment in the economic regulatory agencies had a strong positive effect on the vote for the candidate of the incumbent party, and increases in employment in the social regulatory agencies had a strong negative effect. This implies that voters wanted more economic regulation, even though such regulation increased rapidly in this period, and less social regulation, even when this type of regulation was minimal. For the elections from 1952 through 1992, however, the signs of these effects are reversed. Voters seemed to want less economic regulation and more social regulation, even though economic regulation increased slowly and social regulation increased very quickly. These statistically strong findings raise more questions than they answer. What, for example, explains the sharp difference in the voter response to regulation between these two periods? And why did not administrations respond more rapidly to these apparent voter preferences?

Moreover, the magnitude of these estimated effects seems implausibly large. For the 1952–92 sample, for example, the popular vote for the candidate of the incumbent party appeared to decline by 0.8 percent for each 1 percent increase in economic regulatory employment and to increase by 0.9 percent for each 1 percent increase in social regulatory employment. This implies, for example, that George Bush would have won the popular vote if he had reduced employment in the economic regulatory agencies by 8 percent or increased employment in the social regulatory agencies by 7 percent. Come on! Something that I have not discovered must be wrong about these estimates. The most valuable effect of this study will be to provoke other scholars to confirm or refute these estimates.

This study, interestingly, has almost no bearing on its title, “Explaining Regulatory Policy.” The most important general conclusion of this and similar studies is that administrations do *not* choose a vote-maximizing combination of fiscal, monetary, and regulatory policies; if they did, the coefficients on all of the policy variables would not be significantly different from zero. This implies that administrations have substantial discretion on major economic policies, consistent with an incumbent party victory, in the next election. On this issue, the statement that “voters have apparently had some influence on regulatory policy in the United States for nearly a century” reverses the appropriate inference from the authors’ tests. The assessment section of this article, which attempts to use the empirical findings to evaluate the several theories of regulatory behavior is most unconvincing, as is their conclusion that regulation is best explained by “populist” preferences. My own judgment is quite the contrary: regulatory policy, I suggest, is best explained in terms of the perceptions and preference of the policy elite, not those of the general population. The sociology of elite perceptions probably has more to contribute to explaining regulatory policies than does the most thorough study of voter preferences and behavior. The next studies of the effects of regulatory policy on voter behavior, however, must build on the careful, challenging study by Winston and Crandall—even with its misleading title.

Comment by Alvin Klevorick: The Winston and Crandall paper addresses two major questions. First, do voters in presidential elections respond to regulatory policy or, more precisely, to changes in regulatory policy? Second, does an understanding of how voters in presidential elections respond to changes in regulatory policy help to evaluate alternative theories of regulation (and deregulation)?

Both the title of the paper, “Explaining Regulatory Policy,” and the introduction indicate that the second question is the authors’ major concern. Given that objective, it would have been desirable to have had shown for an explicit model how, at least under the best of circumstances, insights into voters’ assessments of changes in regulation could be used to test the alternative theories. The paper, however, gives relatively little attention to that connection and instead focuses most on the answer to the first question about voters’ attitudes. Winston and Crandall then draw principally upon the signs and significance of the impact

of regulatory changes on voters, together with exogenous information about the direction and effects of regulatory policy, to provide suggestive evidence about the validity of various regulatory theories. I have concerns about the authors' efforts to discern voters' assessments of changes in regulatory policy, and I have serious questions about the insights the resulting regression equations can provide into discriminating among alternative theories of regulation.

Winston and Crandall specify and estimate a model of voting in presidential elections that incorporates a possible relation between the extent of federal regulation in the U.S. economy and the share of the popular vote that the incumbent party wins. The model follows and extends Sam Peltzman's formulation in his article "Voters as Fiscal Conservatives." Voters are depicted as looking to broad indicators for information about the government's performance and then basing their ballot-box decisions on their assessments of which candidate will provide the greater expected benefit. Ray C. Fair provided an explicit derivation of such a model from individual expected utility maximization.¹ Winston and Crandall add to the Peltzman formulation a measure of the direction of regulatory policy, and they conclude that presidential vote shares are indeed influenced by such policy. Specifically, in the 1952–92 period, voters rewarded an incumbent party's candidate for reducing economic regulation and for expanding social regulation. In contrast, in the first half of the century, 1900–48, voters in presidential elections manifested just the opposite preferences—incumbent party candidates who expanded social regulation were punished; those who expanded economic regulation were rewarded. Winston and Crandall establish their results using pooled cross-section (with the state as the unit), time-series analysis of presidential election voting, and they find that their conclusion is robust to various changes in specification.

Measuring the Extent of Regulation

The authors discuss the difficulty of measuring the extent of federal economic and social regulation in the United States. They conclude that "the best available [measure] is clearly the number of federal agency

1. Fair (1978).

employees assigned to regulatory tasks.” Even if they are right that this is the best available measure, it is not clear that the employment figure is a very good one for their purposes. In discussing their results, Winston and Crandall comment that “a skeptic might object that, although voters are likely to be aware of changes in inflation and income preceding an election, they are not actually aware of the precise magnitude of changes in federal regulatory employment.” The authors respond, “Certainly. But as in the case of government spending, voters undoubtedly have a qualitative sense of the direction in which a government is going. . . . [A]t the very least, the public is likely to know what priority an administration places on regulatory policy.”

I guess that I am a skeptic in a major way on this point. I agree with the authors that voters may have a sense—probably do have a sense—of an administration’s priority on regulatory policy and its direction of development (or regress). But I find it implausible that voters look to regulatory employment as a measure of that direction or that they carefully distinguish between employment that furthers economic regulation, on the one hand, and social regulation, on the other. For example, I checked the *American Public Opinion Index* to see the questions that opinion surveys had asked about the economy during the presidential election year 1992. Many questions sought views—at both the state and federal level—about “regulation of the economy.” But there was no question remotely close to inquiring about, or basing a response upon, regulatory employment. There were also no questions that sought out differential attitudes toward economic versus social regulation. I had begun this search to see if there were some good, *regularly available* measure of the public’s attitude toward regulation that could be used in a Winston-Crandall analysis. I came up empty-handed, although polling organizations have inquired episodically about respondents’ reactions to regulation in general and to specific types of regulation. Some of the results of such inquiries are discussed in the paper.

Winston and Crandall offer as some support for their measure the fact that the top five federal economic and social regulatory agencies typically account for much of total employment of each type and that their findings were virtually the same when they used the top five in each category (rather than all agencies) to construct the regulatory employment variables. But this does not seem to help their case much

because table 1 indicates that included among the top five agencies engaged in economic regulation during the 1948–92 period were the Federal Deposit Insurance Corporation, Federal Reserve Banks, Comptroller of the Currency, Patent and Trademark Office, the Securities and Exchange Commission, the Federal Communications Commission, and the Interstate Commerce Commission. Most of these are not agencies that would spring to mind in a discussion of economic regulation.

Moreover, by focusing on the changes in regulatory employment during an administration's tenure, Winston and Crandall assume that voters monitor these changes in each election. But this overlooks the creation of political saliency (à la Anthony Downs) by parties and candidates for office. The effects of economic regulation or social regulation may be important issues in some elections but not in others, and the extent to which they are important is endogenous to the political process. It seems more plausible that the overall performance of the economy—changes in income, prices, even overall government spending—are inherently salient in all presidential elections.

In discussing alternative measures of changes in the extent of federal economic and social regulation, the authors argue against using federal agency spending on regulatory tasks. They indicate that “this measure could simply be capturing changes in facilities and real wages for an existing work force with a fixed set of regulatory responsibilities rather than changes in regulation per se.” But such changes in capital or real wages could reflect more regulatory effort or more effective regulation. It seems odd to use instead just one dimension of the regulatory effort—employment of one factor that produced regulatory output. This criticism is less telling, however, because the authors do indicate that their results were essentially unaffected when the agencies' budgets, rather than their employment levels, were used to measure the extent of regulation.

Of more concern is the fact that the Winston-Crandall measure of regulation takes no account of the regulatory effort required by firms, especially vis-à-vis social programs. One effect of regulation that at least some significant voters would find most palpable would be the effect of regulation on firm effort required. Recall, in particular, the mobilization of the Business Roundtable to assess the costs of regulation in the 1970s. Winston and Crandall did find that firms' costs of com-

plying with Environmental Protection Agency (EPA) regulations were positively and significantly related to the number of EPA employees during 1972–90. It would be interesting to know whether this relation holds across agencies and for the entire time period.

Specific Features of the Regression Results

The authors' initial estimations revealed a significant structural change in the parameters of the voting model following World War II. Consequently, they estimated separate presidential voting models for 1900–48 and 1952–92. Some specific points are worth noting about each set of regression results.

First, the depiction in figure 1 of federal regulatory employment suggests that, although the absolute changes in employment in the 1900–48 period were small, the relatively low level of regulatory employment during that period implies that percentage changes in the measure of regulation's presence will be substantial. Because the change in regulatory employment enters the estimating equation as the difference in logs of employment, these large percentage—but small absolute—changes may lead to curious results.

One particular problem with the results for the earlier period is the instability of the coefficient on the incumbent dummy (see table 3). Its magnitude and significance change sharply as the length of the relevant lag is changed. Furthermore, the effect of the lagged share of the incumbent party is much higher in the 1900–48 regression than in the 1952–92 regression (0.7610 versus 0.4652), although that effect is dramatically reduced (by -0.5659) if the incumbent party candidate is the incumbent president.

With regard to the results for the 1952–92 period, the authors remark that the estimated effects of the nonregulation variables are consistent with the findings in the literature. They note as the most interesting result concerning the nonregulation variables that “voters' inherent preference for President George Bush in the 1992 election was considerably lower than their inherent preferences for all previous incumbent party candidates.” Several of the equations that economists have developed to predict the outcomes of presidential elections using only

economic variables performed very poorly in the 1992 election; indeed, a number predicted a Bush victory. Hence, the dummy variable for Bush in the present paper's specification may be simply acting as an adjustment to avoid that prediction error.

Winston and Crandall use annual data for all the economic variables they include basically because data on regulatory employment are available only on an annual basis. Some models of presidential elections (for example, Fair's) suggest, however, that voters are myopic in their assessment of incumbents' performance, while others (for example, Peltzman's) find that voters take account of the longer haul. The use of annual data on macroeconomic variables, of course, eliminates the possibility of taking account of possible myopia.

The authors find that it takes voters a year to recognize changes in regulatory employment but that there is no recognition lag for the more visible macroeconomic variables. To maintain "consistency," as they call it, between the macroeconomic variables and the regulatory variables, Winston and Crandall use the same starting date for the former as for the latter. For example, since the first (second) lag for regulatory employment for the 1992 election specifies the variable as the change from 1990 to 1991 (1989 to 1991), they specify the first (second) lag for each macroeconomic variable to be the variable's changes from 1990 to 1992 (1989 to 1992). This forcing of the same starting point for macroeconomic variables as for regulatory variables seems odd; one would want to include for each variable the period of data most relevant to the voters' decision. The criterion of "consistency" does not capture this.

One extension of their model that Winston and Crandall investigate incorporates regional dummies in the regression equation. They find that "regulatory policy had especially strong effects on an incumbent party's vote share in southern states." It is unsurprising to the authors that during the 1952-92 period southern voters were harsher than others on administrations that increased economic regulatory employment. They point to southern voters' "long-standing antipathy toward unions and other cartelizing institutions." But it is difficult to square that view of southerners' attitudes with their being concerned about the growth of employment in most of the agencies that top Winston and Crandall's list of economic regulators.

Evaluating Alternative Theories of Regulation

Put aside for now these concerns about how Winston and Crandall assess voters' responses to changes in regulatory policy, and suppose their analysis of that response were unproblematic. How would the results of such a study help us to discriminate among, or to evaluate, alternative theories of regulation? At the outset, let me indicate that I am most inclined to an eclectic view, as Winston and Crandall themselves seem to be, and as others, for example, Noll in his comments on Peltzman's Brookings paper several years ago, are.² There are strengths and weaknesses in each theory; our best hope for an understanding of why we get regulatory changes is to combine the kernels of truth in each.

Winston and Crandall present their assessment of the alternative theories of regulation in modest terms. They describe their endeavor as one of providing an interpretation of their results on voters' reactions to regulatory policy changes by examining the pattern of signs and significance of the regulatory employment coefficients in their regression in the context of these alternative theories. They recognize that their analysis of regulation's influence on voter behavior does not lead to a rigorous formal test of hypotheses about regulatory policy, and they consider their results in conjunction with their independent assessment of the direction and effects of regulatory policy over the last century.

I do not see the role that their regression results plays in assessing the public interest theory or its less expansive sibling, which Winston and Crandall call the populist theory. The former asserts that regulatory policy aims to maximize social welfare (for example, producer plus consumer welfare) while the latter characterization holds that regulatory policy seeks solely to maximize consumer welfare (so that producers do not count here). But then the test of the public interest theory is whether changes in regulation (for example, the deregulation of the late 1970s and the 1980s) enhance social welfare. The analysis required follows the example set in Winston's recent survey, "Economic Deregulation: Days of Reckoning for Microeconomists."³ The assessment

2. Noll (1989b).

3. Winston (1993).

that voters in presidential elections make of regulatory policy changes is beside the point. Indeed, to make use of regressions that relate incumbent party shares in presidential elections to changes in regulatory policy would require the maintained assumption that *individual* voters cast their ballots based on considerations of social welfare.

Similarly, the test of the populist theory is whether consumer welfare increased as a result of changes in regulatory policy. The estimates of how voters evaluate those changes are superfluous. To use those regression estimates the analyst would have to posit that voters (who, as a group, have interests as both producers and consumers) choose among candidates on the basis of which one will increase consumer surplus the most.

Consider now the role that the Winston-Crandall regressions can play in assessing what they call the Chicago theory and its near-neighbor, which they label the public choice theory. The former “posits that regulation is one policy instrument that politicians use to maximize their vote share,” while the latter holds “that the coercive power of the state enables politicians to exploit regulatory policy solely for their benefit.” Under what the authors call the public choice theory, any benefits that redound to private parties do so only because rent extraction by politicians is imperfect.

Winston and Crandall interpret Stigler’s 1971 article, an exemplar of the Chicago theory, as suggesting “that any change in economic and social regulatory employment could have a positive effect on the incumbent party’s vote share,” and Peltzman’s 1989 interpretation of the theory as suggesting that “vote maximization could require either an increase or a decrease in regulation over its current level.” The former they find inconsistent with some of their regression results; the latter interpretation they assert carries ambiguous implications for their regressions and hence is untestable with them.

In fact, the Winston-Crandall results can be used to evaluate the Chicago theory, in either its Stigler or Peltzman form, but not with the information that Winston and Crandall bring to bear in their section entitled “Interpreting the Empirical Findings.” There they rely only on the pattern of signs and significance of the coefficients of the regulatory employment variables in their regressions. But those coefficient signs cannot tell the story. What one wants to know is whether the combination of changes in economic regulation employment and social

regulation employment increased the incumbent party's vote share in an election. The authors present just such information but not until table 5. The combination of the predicted effects on the incumbent party's share presented in the first two columns of table 5 helps to assess the Chicago theory. Exercising the caution that the authors suggest in footnote 47, these results tell us that sometimes an incumbent administration's choices about regulatory effort increased the party's share in the presidential vote, and sometimes it decreased that share. It is interesting that in only one election, 1988, did the effects of changes in social and economic regulation move voters in the same direction, although both effects were small.

This discussion assumes that during an administration's term, the incumbent is aware of the populace's attitudes toward regulation and actively chooses the rate and direction of regulatory activity to influence votes in the next election. Another way to assess the use of regulatory instruments to maximize votes is to posit that a new administration—whether an incumbent who has been reelected or a new occupant of the White House—will learn from the election that placed it in power. Under this hypothesis, the administration will select regulatory policies in response to the message voters have sent. Hence, we could ask whether, after elections in which regulatory policy had a significant effect on the outcome, the new administration changed regulatory employment levels in a responsive direction. For example, if the incumbent was unseated and the Winston-Crandall estimates suggest that his increase in economic regulation had sharply reduced the share of the vote he received, did the new occupant of the White House turn his attention to reducing employment in the economic regulatory arena? This inquiry would also shed light on Winston and Crandall's view that voters in presidential elections have gotten the regulatory policy they want. Unfortunately, the authors' approach to answering this question, by estimating a model to explain the change in regulatory employment as a function of lagged values of such employment, the share of the vote the incumbent party received in the preceding election, and other variables, was unsuccessful. As they write, "in particular, the vote share in the previous election had no explanatory power."

A problem with this testing of the Chicago theory, whether by examining the effects of an administration's changes in regulatory policy

on the next election or by seeing whether an administration learned from the most recent political war, is that it requires too much. Winston and Crandall observe that “politicians draw on a portfolio of policies both to get reelected and to pursue their own ideological interests.” Hence, in what the authors describe as “political shirking,” politicians do not respond to voters’ preferences about regulation all the time. The term shirking seems appropriate, however, only if the politician is sacrificing votes by ignoring voters’ preferences in this domain while not gaining votes in another domain. The political resource budget constraint may be effective, and inattentiveness to voters’ preferences about economic and social regulation may reflect simply a rational allocation of limited resources. This would not be inconsistent with the Chicago theory because that theory would have the rational politician optimally allocating her or his scarce resources to maximize her or his share of the vote. It would seem most appropriate to reserve the term “shirking” for those situations in which the politician—as agent—is slacking to pursue interests (perhaps ideology alone) that are inconsistent with the interests of the populace—as principal. It is difficult, at best, to see how one would distinguish the rational selection of a set of vote-maximizing policies from true political shirking, which would be inconsistent with the Chicago theory. This last point serves to underscore, however, the importance of keeping in mind the broad institutional features of the political scene as we continue our efforts to explain regulatory policy.

With regard to what Winston and Crandall style “the public choice theory,” the critical element in any test is how one interprets the rents politicians extract from their deployment of the coercive power of the state. Under either of the interpretations that the authors offer, their results can be brought to bear in an assessment of the theory. If rents are purely financial wealth, then changes in the rate and direction of regulation should not have any effect on the incumbent’s vote share. This is inconsistent with the Winston-Crandall results. If, on the other hand, rents include votes, then the authors state that an unambiguous test of the theory is not possible. To the contrary, if rents include votes, then we ought to find the same kind of results in table 5 when the public choice theory holds as we expect to find when the Chicago theory does. My comments about testing the Chicago theory apply here as well.

Concluding Remarks

Winston and Crandall address questions of interest and importance to students of regulation—and perhaps to politicians as well. Although I have a number of concerns about their analysis, I concur fully with two general conclusions they draw. Namely, it is very important to continue educating the public about the effects of regulation, and it remains extremely difficult to predict the evolution of regulatory policy.

Authors' Response: The objective of our paper is to answer the *sole* question raised by its title, and we do offer an answer to that question. We observe that our analysis does not explicitly test previous theories of regulation, but the findings in table 5 cast some doubt on these theories and point us to a new explanation. Our assessment in the paper of the major criticisms of the voting model raised by the discussants results in the conclusion that these criticisms do not have any impact on the main findings. As we point out, our explanation of regulatory policy, based on portfolio behavior, leads to considerable indeterminacy—unfortunately, this may be the way the world works.

General Discussion: Several participants questioned the authors' distinction between social and economic regulation. John Pencavel argued that some of the agencies classified as social regulatory bodies are also deeply involved in economic regulation. For example, he said, the Equal Employment Opportunity Commission considers the wage and employment of minorities and women to be among its highest priorities. The National Labor Relations Board makes decisions on the appropriate definition of the bargaining unit and on the activities of the employer and the union that may have significant effects on wages. Because the paper's distinction between social and economic regulation figures prominently in its results, Pencavel said, the authors must provide a more persuasive defense for partitioning the regulatory bodies in this way.

Leonard Waverman noted that the five largest regulatory agencies according to employment include the Federal Reserve, the Comptroller of the Currency, and the Securities and Exchange Commission. He argued that the sixth largest regulatory agency, the Federal Communications Commission (FCC), is responsible for more pernicious regula-

tion than any of the largest five. Waverman said it was hard to believe that voters would view a change in the level of employment at the office of the Comptroller of the Currency in the same manner as they would a similar change at the FCC. He suggested that the authors disaggregate their results to the level of individual agencies to try to find significant effects at that level.

Paul Joskow argued that some disaggregation is necessary—although not to the level of individual agencies—because many of the economic regulatory agencies perform functions similar to the social regulatory agencies. He suggested that the agencies should be broken into categories that more precisely define their responsibilities. These might include one for agencies, such as the Interstate Commerce Commission, that regulate prices and entry, and one for agencies, such as the Environmental Protection Agency and the Food and Drug Administration, that regulate health and safety.

Cliff Winston responded that the authors had tried dividing the social regulatory agencies into five categories, including job safety, energy, and environment, and the economic regulatory agencies into four categories, including banking, industry-specific, and general business. He said the regressions with variables for these categories yielded signs that were generally the same as those for the aggregated variables, although some did not have statistical precision. More important, he said, use of these disaggregated variables had shown that no single category was driving the overall results.

Several suggestions were made regarding ways to bring additional elements into consideration or to reconfigure the data used by the authors. Alvin Klevorick suggested that the authors examine the results of public opinion polls on regulation-related issues. Although conceding that questions seeking opinions on specific types of regulation, such as airline and telecommunications deregulation, are only rarely conducted, he said that good proxy questions concerning issues such as the public's commitment to markets and to noninterference in markets are asked with greater frequency. Klevorick said that the use of such survey data might enable the authors to look at how administrations adjust regulatory policy in response to public opinion.

David Ribar suggested that the authors try to disaggregate specific social and economic regulatory agencies by region. He also thought it might be useful for the authors to distinguish between pernicious and

beneficial regulation. In addition, he said that political party might affect voters' reactions and so it might be important to distinguish whether a Democrat or Republican president was responsible for the changes in regulation. Noting that the differential effect of economic and social regulation is an important issue, Peter Reiss argued it would be interesting to look at trends in voting behavior by gender, race, and income, rather than by region. He noted that such data is available for the last five or six presidential elections.

Peter Pashigian suggested that the authors should provide results for all regions, not just the South. He believed that results for the West would be similar to those for the South, because parts of the West are also antagonistic to certain forms of government regulation. Robert Crandall responded that the authors had tried regional variables, but none explained any additional variance, except those for the South. Crandall added that the results show that voters in the South have gradually grown less hostile to social regulation.

Several participants made suggestions or raised concerns about modeling and measurement issues. Pencavel noted that the authors' dependent variable varies over time and across states, while all the independent variables (except for a lagged dependent variable) are aggregated variables that do not vary across states. As a consequence, the effective degrees of freedom in their sample are closer to one-fiftieth of what they report. Winston responded that the authors had investigated the issue of degrees of freedom but had found that it was not a problem. Ronald Braeutigam suggested that the authors estimate a simultaneous equation model to examine both the changes in voting behavior that are a function of past regulation and the changes in regulatory policy that are a function of movements in voting behavior.

Henry Aaron argued that an important portion of regulation imposed by the federal government is enforced by agencies that are not classified as regulatory bodies in the paper. He noted, for example, that the Americans with Disabilities Act is being enforced within the Department of Health and Human Service. Medicaid and aid to families with dependent children, programs that impose severe regulatory constraints on state governments, are also administered within that department. Moreover, he pointed out, the authors do not define the Internal Revenue Service as a regulatory agency, even though it clearly performs such functions. Thus, Aaron argued, employment in the regulatory

agencies identified in the paper may not be a good proxy for overall regulatory intrusiveness.

Nancy Rose argued that the magnitude of the paper's results had made some of the participants skeptical and convinced her that there may be some problem with model specifications. Noting that social and economic regulation have opposite effects on voting, she suggested that these variables may be highly correlated, particularly in the presence of controls for other economic variables, which may push the coefficients for both away from zero. For example, the economic regulation variable may be estimated to have a large effect on voting because its impact can be offset by those of the social regulation variable. She also found it highly implausible that voters in the South now place a positive weight on growth in social regulatory employment, even though they may be less hostile to regulation than in the past. Winston conceded that the magnitudes of the results were somewhat surprising, but he said that they were not inconsistent with the results obtained by researchers who examined the effect of government spending on voting. He suggested that the aggregate time series nature of the data could tend to inflate the coefficients.

William Niskanen suggested that the paper reveals that an administration has enormous discretion with regard to public policy. He said that the results show that an administration can pursue fiscal, monetary, and regulatory policies that are strongly contrary to the interests of voters and still be reelected because political and macroeconomic variables overwhelm the consequences of the specific policy variables. Thus, he concluded, elections are a very weak means of correcting policy errors.

Reiss argued that the authors must provide a stronger theoretical foundation explaining why they believe that voters would hold the president responsible for regulation, rather than Congress, government bureaucrats, state governors, or state representatives. In addition, he said, they must articulate a theory regarding what the president should be held responsible for regarding regulation. Reiss said that it was not clear to him that regulatory employment would be more noticeable to voters than other aspects of regulation, such as regulatory spending.

References

- Abelson, Philip H. 1993. "Regulatory Costs." *Science* 259 (January 8): 159.
- Buchanan, James G., and Gordon Tullock. 1962. *The Calculus of Consent: Logical Foundations of Constitutional Democracy*. University of Michigan Press.
- Campbell, James E., and Thomas E. Mann. 1992. "Forecasting the 1992 Presidential Election: A User's Guide to the Models." *Brookings Review* 10 (Fall): 22–27.
- Cantril, Hadley. 1951. *Public Opinion 1935–1946*. Westport, Conn.: Greenwood Press.
- Fair, Ray C. 1978. "The Effect of Economic Events on Votes for President." *Review of Economics and Statistics* 60 (May): 159–73.
- Garraty, John A. 1991. *The American Nation: A History of the United States*. 7th ed. Harper Collins.
- Glaeser, Martin. 1957. *Public Utilities in American Capitalism*. Macmillan.
- Hahn, Robert W., and John A. Hird. 1991. "The Costs and Benefits of Regulation: Review and Synthesis." *Yale Journal on Regulation* 8 (Winter): 233–78.
- Hilton, George W. 1966. "The Consistency of the Interstate Commerce Act." *Journal of Law and Economics* 9 (October): 87–113.
- Kalt, Joseph P., and Mark A. Zupan. 1984. "Capture and Ideology in the Economic Theory of Politics." *American Economic Review* 24 (June): 279–300.
- Kramer, Gerald. 1971. "Short-Term Fluctuations in U.S. Voting Behavior 1896–1964." *American Political Science Review* 65: 131–43.
- Levine, Michael E. 1989. "Comment." *Brookings Papers on Economic Activity: Microeconomics, 1989*: 42–48.
- McCloskey, Donald N. 1992. "Writing as a Responsibility of Science: A Reply to Laband and Taylor." *Economic Inquiry* 30 (October): 689–95.
- Moore, Thomas G. 1978. "The Beneficiaries of Trucking Regulation." *Journal of Law and Economics* 21 (October): 327–43.
- Niskanen, William. 1975. "Bureaucrats and Politicians." *Journal of Law and Economics* 18 (October): 617–44.
- . 1979. "Economic and Fiscal Effects on the Popular Vote for the President." In *Public Policy and Public Choice*, edited by Douglas W. Rae and Theodore J. Eismeier, 93–120. Beverly Hills: Sage.
- Noll, Roger G. 1989a. "Economic Perspectives on the Politics of Regulation." In *Handbook of Industrial Organization*, edited by Richard Schmalensee and Robert Willig, vol. 2, 1254–87. Amsterdam: North Holland.
- . 1989b. "Comment." *Brookings Papers on Economic Activity: Microeconomics, 1989*: 48–58.

- Page, Benjamin I., and Robert Y. Shapiro. 1992. *The Rational Public: Fifty Years of Trends in Americans' Policy Preferences*. University of Chicago Press.
- Peltzman, Sam. 1984. "Constituent Interest and Congressional Voting." *Journal of Law and Economics* 27 (April): 181–210.
- . 1987. "Economic Conditions and Gubernatorial Elections." *American Economic Review* 77 (May): 293–97.
- . 1989. "The Economic Theory of Regulation after a Decade of Deregulation." *Brookings Papers on Economic Activity: Microeconomics, 1989*: 1–41.
- . 1992. "Voters as Fiscal Conservatives." *Quarterly Journal of Economics* 107 (May): 327–61.
- Reeves, Richard. 1993. *President Kennedy: Profile of Power*. Simon and Schuster.
- Shapiro, Robert Y., and John M. Gilroy. 1984a. "The Polls: Regulation—Part I." *Public Opinion Quarterly* 48 (Summer): 531–42.
- . 1989b. "The Polls: Regulation—Part II." *Public Opinion Quarterly* 48 (Fall): 666–77.
- Sheehan, Dennis, and Clifford Winston. 1987. "Expectations and Automobile Policy." In *Blind Intersection? Policy and the Automobile Industry*, by Clifford Winston and Associates, 89–102. Brookings.
- Stigler, George J. 1971. "The Theory of Economic Regulation." *Bell Journal of Economics and Management* 2 (Spring): 3–21.
- . 1981. "Comment." In *Studies in Public Regulation*, edited by Gary Fromm, 73–77. MIT Press.
- Weingast, Barry R., and Mark J. Moran. 1983. "Bureaucratic Discretion or Legislative Control? Regulatory Policymaking by the Federal Trade Commission." *Journal of Political Economy* 91 (October): 765–800.
- Winston, Clifford. 1993. "Economic Deregulation: Days of Reckoning for Microeconomists." *Journal of Economic Literature* 31 (September): 1263–89.