Bureaucratic Discretion and Regulatory Success without Enforcement

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Discretion, that ability to decide how policies will be implemented, is a key component of bureaucratic power. Since agencies have a great deal of discretion (Rourke 1984), studies of policy effectiveness need to examine what can occur when different implementation choices are made. In order to understand the outputs and outcomes of agency implementation activity, we need to know what happens when policies are vigorously implemented as well as when policies are largely ignored.

Most studies of regulatory effectiveness focus on implementation problems stemming from various enforcement mechanisms. In general, the existing literature on the effectiveness of regulatory policy has found that the strength of government needs to be behind a policy for it to work. This literature has found three rules of thumb. First, command and control regulation works only if enforcement is adequate. For example, highway speed limits are more effective when police are present and enforcing them. Second, information policy works if people pay attention to it, which often requires the government to actively distribute and, if necessary, update the information. Third, incentives work if they are large enough. For maximum effectiveness, this requires the government issuing the incentives to monitor them closely and update them as needed to keep them large enough. Most existing research on regulatory effectiveness thus focuses on the link between government implementation, enforcement, and policy success. The conventional wisdom is that if an agency uses its discretion and decides to implement and enforce a regulation properly it will be more successful.

The problem that remains, of course, is finding out what happens to regulatory policy if the implementing agency decides to ignore it or a policy is adopted without assigning enforcement power to a bureaucracy. Contrary to the conventional wisdom, a choice by an agency to not implement a policy does not automatically mean that the policy will fail. In recognition of the fact that occasionally government coercion is not needed for a successful policy, some research focuses on the regulated individual rather than the regulator. For example, Scholz and Pinney (1995) find that feelings of duty and the subjective fear of getting caught compel people to truthfully report their income and pay taxes to the Internal Revenue Service (IRS). The actual, objective, audit rate often has little to do with tax compliance. This can be adequately explained only by focusing on the attitudes and situations of the taxpayers themselves (see also McGraw and Scholz 1991).

Other research has focused on facilitative models to explain regulatory behavior. Gray and Scholz (1993) and Scholz and Gray (1997) find that coercion by the Occupational Safety and Health Administration (OSHA) can only partially explain drops in worker accident rates. Gray and Scholz show that reaction by management to OSHA inspections, rather than the inspections and penalties themselves, explains increases in worker safety. Scholz and Gray show that inspections initiated by workers rather than OSHA had a greater positive impact, indicating that when OSHA used its discretion to act as a facilitator for cooperation rather than as a coercive agency better results were achieved.

Signaling can also play an important role in compliance decisions. In strategic communications models, one informed actor provides information to another, less-informed actor in an attempt to change that decision maker's behavior (Lupia 1994; Crawford and Sobel 1992; Milgrom and Roberts 1986; Spence 1973). This has important implications for regulatory compliance. The government can attempt to influence compliance decisions by sending signals about the consequences of those decisions.

This essay borrows the frameworks of these studies and applies them to analyzing the effectiveness of a salient command and control regulatory device: state clean indoor air laws aimed at restricting smoking in public buildings and workplaces. Based on the frameworks and the results from the empirical analysis, I find that, contrary to "traditional" expectations of a need for a link between coercion and regulatory effectiveness, clean indoor air laws can be effective in reducing smoking despite an almost total

lack of enforcement. State and local law enforcement agencies have simply decided to ignore the implementation of these laws.

This does not mean that public bureaucracies are irrelevant to this policy area. On the contrary, public health and law enforcement agencies could play an important role as signalers and facilitators for cooperation. Scholz and Gray (1997) and Licari and Meier (2000) find that facilitation and signaling can be important in explaining the effectiveness of an agency's activities. In this case, public bureaucracies can use clean indoor air laws to reinforce social norms and send public health signals about smoking. Bureaucracies can use these regulations in noncoercive ways rather than focusing on expensive traditional enforcement methods. Furthermore, this project highlights a key issue for the study of bureaucratic enforcement. It is important to factor in the potential for signals and other heuristics in order to avoid overestimating the impact of regulatory bureaucracies.

The results support the idea that clean indoor air laws compel people to smoke less because of the fear of social disapproval as well as signaled information about the health hazards of smoking. Since strict penalties under the law and high enforcement levels do not exist, these "traditional" indicators of command and control policy success cannot explain why clean indoor air laws are able to reduce levels of smoking. Thus, this essay represents an important extension of the work already done on signaling and duty and fear heuristics. I focus on an element of social regulation. Social regulation in general is often not well received by the public (Eisner 2000). Also, smoking regulation is targeted at a portion of the population that is highly resistant, if only because of the addictive nature of cigarettes. Thus, this study offers a test of signaling and other information heuristics that is very stringent.

The findings in this essay indicate that the link between coercion and successful regulation, while not incorrect, is certainly narrow. When designing regulation and deciding on appropriate enforcement levels, legislators and bureaucrats need to be aware of the existence of policies that are largely "self-enforcing." Also, when policy analysts examine the effectiveness of regulation attention needs to be devoted to the fact that government coercion is only one side of the regulation coin. Social norms (Ostrom 1998; Scholz 1998; Scholz and Lubell 1998) are key to understanding how we can solve the collective action problem of compliance.

Clean Indoor Air Laws and Smoking

The Nature of Clean Indoor Air Laws

Clean indoor air laws were generally not considered by state governments until the 1980s. As research on the harmful effects of secondhand smoke mounted, people began to realize that smoking was not only harmful to smokers themselves but that it also damaged the health of those in the vicinity. This eventually spread to specific objections about smoking in the workplace.

Clean indoor air laws are designed and implemented primarily by state governments, although the federal government has also introduced similar laws of its own, such as smoking bans on domestic airline flights. State laws restricting indoor smoking first appeared mainly in the 1980s. Minnesota was the first to introduce such a law (the Clean Indoor Air Act of 1975), but other states were rather slow to follow. Most states did not introduce their own laws until the late 1980s or early 1990s. Nine states still do not have a clean indoor air law.[1]

In addition to being introduced over a wide spatial and temporal range, clean indoor air laws also vary in scope. Some states have comprehensive laws that completely ban smoking in certain places of work (private or government). Several others have laws restricting smoking to varying degrees across government work sites and private businesses. Other states simply limit indoor smoking to designated areas.

Enforcement of Clean Indoor Air Laws

Command and control regulation typically requires monitoring and penalties for noncompliance. Without monitoring, the government has no way of knowing whether people are complying with the law. Without penalties to accompany the monitoring, there will be little incentive for citizens to comply with the law. These seem like reasonable expectations about how command and control regulation works, and indeed they make up the basic assumptions about how to design and implement a successful command and control policy.

Clean indoor air laws, however, rarely fit this description. Jacobson and Wasserman (1997) find that state clean indoor air laws are "self-enforcing and that they will not be systematically enforced by state or local authorities" (49–50). In other words, citizens voluntarily comply

with the laws since government is not willing or able to enforce them with monitoring and penalties. Even in states with strong clean indoor air laws, government enforcement is minimal and relies upon voluntary compliance (Jacobson and Wasserman 1997).[2]

To further underscore the importance of voluntary compliance, the penalties imposed for breaking a clean indoor air law are almost always light. The maximum fine imposed on a smoker in Idaho, for example, is $10 (Downey and Gardiner 1996). More than half of the states do not even have penalties for failing to comply. In these states, there is no mechanism to legally punish a smoker who is reported by another citizen. Thus, even though it may be easy for nonsmoking citizens to detect and report violations, there are still little or no effective legal or enforcement mechanisms preventing people from smoking indoors. With the absence of meaningful penalties, ease of detection becomes irrelevant. There are few or no legal consequences to getting caught, and thus there are no credible threats of enforcement from either the government or nonsmoking citizens. Furthermore, Jacobson and Wasserman (1997); Rigotti et al. (1993); and Rigotti, Stoto, and Schelling (1994) show that oversight by government agencies or citizens (even those actively involved in antitobacco groups) does not meaningfully exist. Nonsmokers do not seem interested in monitoring and reporting smokers. For clean indoor air laws to work and reduce smoking, some other social mechanisms are required.

The lack of enforcement is important because clean indoor air is essentially a collective action or "social dilemma" problem (Ostrom 1998). This occurs when individuals face choices in which maximizing their short-term self-interest yields an outcome that makes everyone worse off. A smoker may choose to maximize his or her short-term self-interest by smoking indoors, thereby polluting the air everyone else in the building is breathing. In this sense, clean indoor air is a public good, or at least a common-pool resource, and compliance is the equivalent of a cooperative solution to the collective action problem (Scholz 1998). Cooperation (not smoking indoors), therefore, leads to Pareto-efficient outcomes. The key problem is achieving this cooperation. One key way it can be attained is through heuristics and social norms as well as rules designed to reinforce those norms (Ostrom 1998). Since voluntary compliance norms are active in these antismoking policies (Jacobson and Wasserman 1997; Rigotti and Pashos 1991; Rigotti et al. 1992, 1993; Rigotti, Stoto, and Schelling 1994), clean indoor air laws can facilitate cooperation.

Clean indoor air laws have a clear goal: they are meant to reduce the amount of secondhand smoke to which nonsmokers are exposed. The facilitative effect is the key to their success. *Simply, if people are influenced by the noncoercive aspects of clean indoor air laws in their state, the amount people smoke should drop.* This is the main test offered in this essay.

Heuristics, Fear, and Signaled Information

Heuristics are cognitive tools that are useful when people face situations in which they need to make a choice based on insufficient information. Scholz and Pinney's (1995) "duty heuristic" claims that a citizen's sense of duty to obey the law provides cues for compliance decisions, and that information is accessed by the citizen when it is relevant and needed. This is akin to voting heuristics, wherein strength of party identification and candidate "likability" play roles in determining vote choice rather than detailed knowledge of the candidate's stance on pertinent issues. Since detailed knowledge is often difficult to obtain, the citizen will rely on cognitive shortcuts to make a choice. Heuristics should be useful for understanding compliance behavior generally as well as in this particular case. When government uses a facilitative mechanism to increase information and reinforce existing norms and heuristics, compliance behavior should increase.

Fear

Fear can influence compliance in an important way. Feelings of fear can influence one's perception of the negative consequences of noncompliance. Furthermore, people who feel a sense of duty to follow the law will estimate the chances of receiving punishment as being great. Those who do not feel an obligation will estimate low chances of getting caught and receiving punishment (see Scholz and Pinney 1995). In this case, fear applies to both the estimations of receiving punishment under the law and "social" punishment. As the popular image of smoking has waned, especially in the last twenty years, smokers may refrain from lighting up out of fear of social embarrassment or as a common courtesy, although it is doubtful that a smoker will quit altogether.

Signaling

Signaling can play a crucial role in the effectiveness of smoking regulations because the government gathers and disseminates information on

the health effects of smoking. The federal government officially took on this role in 1964 with the first surgeon general's report on smoking and health. Although the government provides direct information with surgeon general's reports and policies such as warning labels (Fritschler and Hoefler 1995), the government (both state and federal) also sends signals when it is designing and implementing regulations such as clean indoor air laws. Unlike information policy, these signals are less direct since they often are a by-product of the logic for designing and implementing new tobacco regulations.

Signals from clean indoor air laws should exist because the negative health effects of secondhand smoke are not well known or understood. Although the effects of smoking on smokers were well known by the 1980s, secondhand smoke was (and still is) poorly understood.[3] Signals are strongest when the information is new and perhaps unexpected. Thus, clean indoor air laws should send signals precisely because they serve to provide information on an issue that remains confusing to this day.

The government is able to send these signals for a variety of reasons. Media coverage of legislative debates and new laws emphasize health risks and send this signal to citizens along with the specific goals of the new policy. Perhaps most importantly, public health agencies also emphasize the usefulness of tobacco regulation as a public health policy and are involved in signaling this information (see e.g., Department of Health and Human Services 1992, 1994, 1998; and Centers for Disease Control and Prevention 1996). The signals inform smokers that the ultimate goal of the new policy is to reduce the risks of poor health (or even death) from smoking. If the public health signals are received and influence smokers, clean indoor air laws should have an impact on smoking levels. Smokers who act on the signaled information about the public health reasons for the laws have an incentive to cut back on cigarettes. Their choice of whether or not to smoke is influenced by the desire to reduce the risk of smoking-related health problems as well as by the fear of social stigmatization. Clean indoor air acts essentially contribute to a reduction in overall cigarette consumption because the laws and the norms that are fostered by them add to the transaction costs a smoker must absorb.

Signaling and fear, therefore, are both decision aids for smokers. Both should influence smokers to cut back, particularly because the signaled information about the health effects of smoking should create more fear

of noncompliance. Although the clean indoor air laws are primarily legislated to protect nonsmokers, the laws signal enough information about public health to make them antismoking policies in their own right.

Since clean indoor air is a collective action problem, the role of government in this case has changed from enforcer to facilitator. Smokers are looking to cooperate, so they use duty and fear combined with signaled information to arrive at the conclusion that smoking indoors is not acceptable. Clean indoor air laws provide these signals, or focal points (Schelling 1960), for equilibrium behavior, which reduces the transaction costs of compliance. This essay thus represents an indirect test of the duty heuristics, insofar as the data on how individual smokers are reacting to clean indoor air laws are not available.

Modeling the Effects of Regulation on Cigarette Consumption

Base Model

Unlike many items that the government seeks to regulate, cigarettes are addictive, perhaps the most addictive commodity known (Department of Health and Human Services 1994). Since the dependent variable is the number of packs of cigarettes consumed per capita per year for each state from 1955 through 1996, my model must explicitly account for this.[4] Addiction implies that current cigarette consumption is greatly affected by past consumption. Quite clearly, the way to model addictive phenomena is via habit persistence, that is, by simply including a lagged value of the dependent variable as an independent variable (Becker and Murphy 1988; Becker, Grossman, and Murphy 1991; Lewit 1989).[5]

Clean Indoor Air Laws

To this base model, I add measures to test the effects of clean indoor air laws on smoking. To measure clean indoor air laws, I first created an "effort" scale for each state, potentially ranging from zero to 6, although the highest any state scored was 4.[6] Zero indicates no clean indoor air law for state government or private work sites. A score of 1 is given to states requiring a designated smoking area in either government or private work sites. States requiring designated smoking areas in both types of work sites are therefore given the score of 2. See table 1 for the rest of the scaling of this measure. Rather than using this continuous scale, I use a series of dummy variables, one for each category 1 through 4 (category zero

is omitted). Thus, if a state's effort score is 1 for a particular year, it will be coded 1 in the dummy variable representing that effort category and zero for the three others. Likewise, if a state's effort score is 4, it will be coded 1 in the dummy representing effort category 4 and will be coded zero for categories 1, 2, and 3. All states are scored zero for each year until a law is implemented. This will allow for a demonstration of where the critical "signaling threshold" occurs. Low-end reforms may not have a meaningful effect in a statistical sense, while more stringent policies are expected to have much larger impacts. Using the "effort" measure as a continuous variable would not show these differences.[7]

The logic behind how effort influences cigarette consumption is drawn from the idea of signaling. Increased effort sends stronger public health signals to the smoking population. By sending stronger signals, a state government can expect that cooperation will increase. With more comprehensive clean indoor air laws, the focal point (Schelling 1960) becomes more obvious and the Pareto-efficient outcome should be more easily attainable. The effort dummy variables should therefore be related to reductions in cigarette consumption, although I expect more comprehensive laws to be more effective.

Other Regulation

The tobacco policy area includes other types of regulation as well, namely, information policy and economic disincentives. To measure information policy, I take notice of two key events in government policy. The first effort by the federal government to take action regarding cigarettes was the requirement that all packages contain a warning label (effective January 1, 1966; see Fritschler and Hoefler 1995). The second event was the federal ban of cigarette advertisements on television in 1971. Such a ban is rare and communicates that a product is so danger-

TABLE 1. Clean Indoor Air Law Effort Scaling

Workplace Type	100% Smoke Free	Designated Area	Designated Area with Ventilation	None
Government	3	2	1	0
Private	3	2	1	0

Note: The Government clean indoor air law score is added to the Private score to form the Effort score. Example: a state requiring a designated area with ventilation for government workplaces and designated smoking areas for private workplaces would receive a score of 3.

ous that producers are prohibited from providing information about it. The variable is coded zero prior to 1966, 1 from 1966 to 1971, and 2 after 1971. This reflects the belief that the warning label represented the start of a negative information policy and that this policy became more forceful after the advertising ban. While I use specific events to code the policy, I am not arguing that these precise events encompass all information policy with regard to cigarettes.[8]

Economic disincentives, that is, excise taxes on cigarettes, are a popular regulatory tool used by both the federal and state governments. Taxes on cigarettes work causally by affecting the price of cigarettes. Because an excise tax is typically passed on to the consumer (see, e.g., Hyman 1996 on the price-distorting effect of excise taxes), I have opted, as have others in this area, to work directly with the real price of cigarettes in cents per pack (1983 = 100).[9] This is then differenced so that the variable measures the change in price.

Some states tax cigarettes much more aggressively than others. These variations must be considered because permeable state boundaries make it more difficult to assess the effectiveness of taxes in reducing cigarette use. Since taxes discourage smoking by increasing the cost, they suffer in performance if there is an opportunity to avoid them and pay lower prices. This avoidance of a high tax by means of purchasing cigarettes in another state with lower taxes (and thus lower prices) is referred to as "bootlegging." To design a proper model of regulatory effectiveness, therefore, the tax levels in the surrounding states and the potential for bootlegging must be taken into account (Baltagi and Levin 1986). Since all cigarette consumption data are actually sales data, failure to do so can result in the apparent effectiveness of a tax increase being exaggerated.

The benefits from bootlegging can be easily measured as the money that would be saved by the individual. Naturally, as the tax in a person's home state increases relative to tax rates in neighboring states, the incentive to bootleg increases. This difference must then be discounted by transaction costs, mostly time and travel (see Manchester 1976; and Wasserman et al. 1991). My measure for the incentive to bootleg is the home state real tax rate (in cents) minus the mean real tax rate for all states that border the home state (for a similar treatment, see Licari and Meier 1997; and Meier and Licari 1997a, 1997b).

Finally, smoking levels are expected to be higher in tobacco states. A variable to control for this is included. It is a simple dummy variable

with a value of one if the state is a tobacco state, defined as having grown a tobacco crop that year (Creek, Capehart, and Grise 1994).

As an extension, a variable was tried in order to control for different policy environments. The relevant environmental difference is obviously a state's level of support for the tobacco industry (farming and production). Since state clean indoor air laws require voluntary compliance, it is possible that they will not operate as effectively in tobacco compared to nontobacco states. This was measured by multiplying the tobacco state dummy variable by the continuous effort scale. The interaction was not significant, and the rest of the results were unchanged, so the variable was dropped.

Data Analysis

To analyze the model, I used pooled time-series techniques for the time period of 1955 through 1996 with the states as units of analysis. Serial correlation and heteroskedasticity were tested for using the Lagrange multiplier and the White tests, respectively. Neither posed a problem for my analyses. All nondummy variables are logged, for two reasons. First, it facilitates interpretation. Second, and more importantly, relationships among demand and price and other regulations are not expected to be linear.

Simultaneity is another problem that can plague time-series analyses. Considering that compliance will be due to political and environmental factors, which can also be related to policy adoption, simultaneity is possible. This should not be a problem, however. While I expect clean indoor air laws at time t to influence smoking at time t, smoking at time t can only influence the adoption of smoking regulations at some future time. Lawmakers will only have access to information about smoking rates and attitudes after the fact. Furthermore, legislation or rule making typically takes time, even if there is access to current data. In other words, the statistical model has weak exogeneity, which is sufficient to produce unbiased estimates. As a further check, a Hausman specification test (Davidson and MacKinnon 1993) shows that the estimates do not suffer from simultaneity bias.[10]

Results

The results of the analysis are presented in table 2. Table 3 shows the results of the differenced model as a check on the robustness of the model in table 2. The differenced model, however, also has the advantage on a conceptual level of implicitly controlling for the health consciousness of

TABLE 2. Effects of Clean Indoor Air Laws and Other Regulation on Cigarette Consumption

Dependent variable = Annual per capita cigarette consumption in packs, logged		
Variable	Slope	Standard Error
Lagged consumption	.971	.0046***
Clean indoor air effort 1	−.007	.0022***
Clean indoor air effort 2	−.007	.0022***
Clean indoor air effort 3	−.010	.0028***
Clean indoor air effort 4	−.017	.0055**
Tobacco state	.002	.0009*
Change in price	−.281	.0163***
Bootlegging incentive	−.030	.0038***
Information policy	−.004	.0005***
R^2	.97	
SE	.018	
N	1,986	
Lagrange multiplier	.85	
Prob($df = 5$)	.97	
White test	1.52	
Prob($df = 10$)	.99	

***$p < .001$. **$p < .01$. *$p < .05$. All one-tailed tests.

TABLE 3. Effects of Clean Indoor Air Laws and Other Regulation on Cigarette Consumption, Differenced Model

Dependent variable = Change in annual per capita cigarette consumption in packs, logged		
Variable	Slope	Standard Error
Clean indoor air effort 1	−.004	.0022*
Clean indoor air effort 2	−.005	.0023*
Clean indoor air effort 3	−.008	.0028**
Clean indoor air effort 4	−.011	.0055*
Tobacco state	.001	.0009*
Change in price	−.285	.0165***
Bootlegging incentive	−.022	.0035***
Information policy	−.004	.0005***
R^2	.19	
SE	.019	
N	1,986	
Lagrange multiplier	.90	
Prob($df = 5$)	.97	
White test	.99	
Prob($df = 9$)	.99	

***$p < .001$. **$p < .01$. *$p < .05$. All one-tailed tests.

a state, which could be seen as a selection bias problem in the model in table 2. However, since the addictiveness of cigarettes is a crucial element of any model of smoking regulation, my discussion will focus on the results in table 2.

The key variables, the clean indoor air law effort dummies, are all associated with lower cigarette consumption. Since these laws depend on voluntary compliance and their primary goal is something other than reduced cigarette consumption, this indicates that noncoercive factors are working. *Without any willingness to voluntarily comply, these laws would not have any effect on cigarette consumption.* Specifically, a state that adopts a clean indoor air law that is relatively weak (i.e., a law that would score a 1 or 2 on the continuous effort scale) sees cigarette consumption drop by .7 percent. A state that adopts a stronger law (e.g., one that would score a 4) has cigarette consumption drop by 1.7 percent. This effect is nearly two and a half times greater than the impact in the first example. Clearly, stronger effort provides much stronger signals, and the two low-end categories provide about equal impact. While these effects may seem to represent insignificant reductions in smoking, these are the first-year impacts only. With the lagged dependent variable in the model, impacts continue into the future at gradually declining rates. The total impact of a shift in a state's clean indoor air law effort is actually quite large.[11]

The other regulations also work to deter smoking. A 1 percent increase in price is associated with a decrease in cigarette consumption of .28 percent. Since this is the first-year impact, even a small price increase will have large long-term effects; the total decrease in per capita consumption from a 1 percent increase is nearly 10 percent. The introduction of warning labels in 1966 is associated with a drop in per capita cigarette use of .4 percent. Since this variable is not reset to zero, this impact occurs each year until 1971, when the television advertising ban was implemented. In each year starting in 1971, the information policy variable is associated with a decrease in per capita cigarette use of .8 percent.

The bootlegging incentives variable indicates that uneven prices across state boundaries influence where people will purchase cigarettes. As the price in the home state increases relative to the surrounding states' prices, smokers will travel to purchase cheaper cigarettes. Conversely, a state with low prices located next to states with higher prices will see an increase in sales. A 1 percent increase in the incentive to bootleg is asso-

ciated with a decrease in per capita cigarette consumption of .03 percent in the first year.

Conclusions

This essay has presented a test of the idea that command and control regulation can be successful despite its reliance on voluntary compliance. Using an empirical model, I found support for this. With voluntary compliance, state clean indoor air laws work to reduce levels of smoking. Furthermore, there seems to be a signaling threshold. States that implement clean indoor air laws beyond simply requiring designated smoking areas experience declines in smoking that are much more substantial. In general, however, once a clean indoor air law is implemented it appears that annual cigarette consumption declines faster than when no law is passed.

Citizens are taking clean indoor air laws as a strong signal from government that smoking is hazardous to both smokers and nonsmokers. In this way, the introduction of clean indoor air laws may act as a force to further diminish the social acceptance of smoking. Furthermore, these public health signals could be used to a greater degree by public health agencies. Since state and local law enforcement agencies have decided not to make clean indoor air laws coercive regulation, other agencies have the opportunity to use them in other ways, perhaps as facilitative or public health policy.

Duty to follow the law (influenced by fear of noncompliance) apparently has an effect here. Merely having a clean indoor air law will drive down smoking levels. This seems to be a case in which law enforcement agencies have widely used their discretion over implementation to ignore these policies, since vigorously enforcing clean indoor air laws would be expensive and time consuming.

Lack of enforcement or meaningful penalties, however, does not doom these laws to failure. This study shows that agencies can look for noncoercive ways to successfully implement regulatory policy. When there is policy success without enforcement, this may indicate an opportunity to increase the use of signaled information to further increase the successfulness of the policy. This also suggests that other, nonregulatory agencies can play an important role in implementation of regulation. In this analysis, clean indoor air laws provide signals that public health agencies can use to help facilitate compliance.

This study also has ramifications for other studies of bureaucratic enforcement. Some compliance with regulations will occur through signaling and the use of other heuristics. A portion of compliance that is normally attributed to bureaucratic enforcement, therefore, might well have occurred without any actions on the part of bureaucracy. Studies that fail to incorporate these informal, noncoercive elements of enforcement will, as a result, overestimate the impact of regulatory bureaucracies.

Notes

I would like to thank George Krause, Ken Meier, and Mark Lubell for their valuable comments on earlier versions of this essay.

1. For the purposes of this project, the laws under consideration are those that restrict smoking in places of work (both government and private). Laws restricting smoking in other areas (e.g., grocery stores) exist as well but are much less common and have not been included.

2. Some might argue that clean indoor air laws are indeed enforced but by the businesses themselves. If so, then voluntary compliance does not exist because the firm is providing the enforcement and the punishment. However, businesses do not enforce these laws (Rigotti et al. 1992; Rigotti, Stoto, and Schelling 1994) and instead rely on voluntary compliance from both employees and customers.

3. The 1980s and early 1990s saw intense debate among health professionals, government officials, the general population, and the tobacco industry over the effects of secondhand smoke (Department of Health and Human Services 2000).

4. I have data only for states that actually had a cigarette tax or, in the case of Alaska and Hawaii, only for the time since they became states. By 1971, all states had a state cigarette tax. All data are from the Tobacco Institute (1997).

5. Lagging a dependent variable can make spurious results from failure to control for some variables less likely since it will act as a supercontrol variable. However, if such specification results in correlated errors regression coefficients are both inconsistent and biased (Pindyck and Rubinfeld 1991; Greene 1993). Since the degree of bias declines substantially as the number of cases increases relative to the number of parameters estimated, the extent of bias is unlikely to be large in this case. As a final check, I include the results from a model with a differenced, rather than lagged, dependent variable.

6. These data are from the Centers For Disease Control and Prevention (1996).

7. I do not necessarily expect a dynamic effect other than that provided by the lagged dependent variable. Policies in place will have the continuous effect of preventing smoking, and the introduction of new smokers over time does not alter the ways in which the policies will function.

8. Several other efforts are included in information policy, such as pronouncements by public officials, the release of additional studies, and restrictions on the content of nontelevision advertising. The federal government is the main disseminator of this information. The effects of both policies could not be separated due to collinearity problems.

9. Meier and Licari (1997a) demonstrate that state and federal taxes can explain 95 percent of the variation in cigarette prices during the time period under review here. Price (or tax) is not a health signal per se due to the fact that while taxes may indeed carry signals (Licari and Meier 2000) they may also be adopted for reasons completely different from public health (Licari 2001a). They are always economic disincentives, however.

10. The instruments used for the first-stage regression were government ideology scores (Berry et al. 1998) and state fiscal stress, measured as real revenues minus expenditures, divided by expenditures. Both are related to smoking policy adoption but not to smoking (Licari 2001a, 2001b). The suspect variable (clean indoor air effort scale) was regressed on the exogenous variables plus the instruments. The residuals saved from this regression were used as additional regressors in the original model. The coefficient on the first-stage residuals is not significantly different from zero. Therefore, the test fails to reject the hypothesis of consistent OLS estimates.

11. The total impact is $(\beta)/(1-\lambda)$, or the slope divided by one minus the lagged dependent variable coefficent.