A local regulator's rewards for conformity in policy

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Abstract

This note is an empirical investigation of the benefits that accrue to local building departments for a regulatory policy that conforms to the relative strength of local interest groups. The study uses an interest group model and applies it to data for building departments in 1100 municipalities. It finds that material benefits in terms of budgets and salaries go to building agencies which set a strictness of regulation that reflects the balance of interest group strengths in the locality.

1. Introduction

This note investigates the benefits that accrue to local building departments for a regulatory policy that conforms to the strength of local interest groups. It also contributes an empirical component to the theory that regulation is meted out by an agency in furtherance of its own self-interest as an institution. Following Niskanen's (1971) more general description of bureaucratic processes, Stigler (1971) and Peltzman (1977) introduced the concept of 'supply' of regulation. Their formal model, however, is not readily applied empirically. A number of studies have related interest group strength to governmental policy outcomes, e.g., for tariffs (McPherson, 1972; Pincus, 1977; Caves, 1976; Saunders, 1980) and for tax rates (Marx, 1980; Salamon and Siegfried, 1977; Coolidge and Tullock, 1980). Similarly, Borjas (1980) has analyzed the compensation of federal employees as a function of their constituencies' characteristics. However, no previous study has related the regulatory policies themselves to the benefits subsequently obtained by a regulatory agency. This note aims to do so by exploring local building codes and the material rewards to building departments for their choice of strictness in regulation, relative to the strength of affected interest groups.

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Building codes set the local standards of construction techniques and materials for residential and commercial structures. They are of great importance to the interest groups involved in building, since they regulate the use of labor-saving forms of construction and the permissibility of materials that can be handled by unskilled labor (U.S. Congress, 1981; Nutt-Powell, 1982). Because of the potential reduction in demand for the services of skilled craftsmen, construction unions have usually preferred codes to be restrictive. Builders, on the other hand, tend to benefit from unrestrictive codes, since these reduce the cost of construction and the need for unionized labor. In contrast to these intense concerns, the interest of the general public in building codes is limited, partly due to their low visibility and high technicality (President's Commission on Housing, 1982).

Building codes are almost always subject to local regulation, and are typically administered by building departments. (In a handful of states a state-wide code exists, or local codes must be approved by the state legislature. Such restrictions on local code setting autonomy, however, are rare.) In most cases, local building officials set code standards — or have them ratified by the municipal councils — and enforce them. Political pressures are pervasive in the process. 'Code design and code enforcement do not take place within a political vacuum. Building codes have important economic meaning to those favored or not favored by the specific standard.'

As Field and Ventre (1971: 139 ff.) observe in their wide-ranging study of building departments:

Most local building officials ... are very sensitive to political pressure ... Thus it is that building departments, by and large, have acquired reputations ... for being responsive to the needs of their clients, the members of the local building community. Despite the tenuous hold that building officials have on their positions, their official actions have powerful economic consequences for a sizable portion of the local economy ... Builders are widely known for their aggressiveness and political sophistication ... One can readily visualize (the) pressures that converge on the local building officials in these circumstances.

Unions are similarly forceful: 'When Kansas City changed ... the building code to allow for the use of plastic and copper materials, the A.F.L.-C.I.O. cancelled a scheduled convention in the city and the local plumbers' union collected signatures to force a referendum on the issues' (Fortune 78 [December 1968]: 102 ff.).

The budget of building department is determined in a similar fashion to those of other municipal agencies. Typically, a budget request is forwarded by a department and included, after possible modifications, in the budget proposal submitted to the local council.
support structures exist which link an agency with its clientele and constituents. Powerful interest groups can be persuasive allies to an agency that has to deal with a city council whose inclination is to keep budgets low. Where the regulatory policy of a building agency is strongly opposed by such an interest group, the latter may use the budgetary process as one way of pressuring the agency to mend its ways. Even where there is no outright opposition to an agency's budget, merely the lack of active support by an important group and its political allies can harm an agency that has to compete for allocations with many other parts of local government. As Wildavski (1975) quotes approvingly in his study of the budgetary process:

\[ \text{... In the absence of strong central control over the various departments, each department is relatively free to seek improvements in its financial position by putting pressure on the (city) council. Clearly, in such a system, the advantage lies with the strong (Anton, 1964: 17 in Wildavski, 1975: 131).} \]

And the classic study of New York governance finds that

\[ \text{Without ... allies of weight and influence, without opportunities to form a broadly supporting public opinion, each Commissioner of Buildings is brought back, whatever his initial aspirations, to the necessity of a settlement with the groups whose activities he regulates. It is with them that he must make his peace. (Sayre and Kaufman, 1960: 272).} \]

It is therefore the hypothesis of this note that different regulatory policies by a building agency result in different degrees of material support to that agency, both in terms of budget and also in the salaries of the regulators. Specifically, one should be able to test whether 'rewards' to a building agency can be observed for a regulation that reflects the power of local interest groups.

3. The model

To test the hypothesis, let us assume a regulatory standard of variable restrictiveness \( R \), where \( R \) is a non-negative continuous variable which affects different interest groups \( i \). If this standard were set by a politically sensitive body such as a legislature or city council, the strictness of regulation \( R^* \) is assumed to be determined according to

\[ R^* = f(P_i, \ldots, P_n, X_j) \]  

(1)

where \( P_i \) is the political strength of interest group \( i \), and \( X_j \) is a vector for a variety of local conditions underlying the regulation. However, the setting of most building code regulations is normally delegated by the legislative
body to an administrative agency – the building department – which determines and enforces the actual standards. If it is true that the ‘supply’ of regulation by an agency affects its self-interest, one should be able to observe rewards and punishments for different types of policies. The closer the agency comes to ratifying the political equilibrium solution that would have emerged in a politically sensitive legislative body, given the strength of the interest groups, the greater would be its rewards. These may be expressed by a ‘rewards function’ of the form

\[ W = g(|R^* - R|, Y_k) \]  

(2)

where reward \( W \) is affected by the divergence of the actual regulation \( R \) from the expected political equilibrium \( R^* \) as well as by other factors \( Y_k \). This is a testable model, with equation (1) for regulation \( R^* \) and equation (2) for the reward for the supply of \( R \).

With two interest groups assumed, let the regulation function be, corresponding to equation (1)

\[ R^* = a_0 + a_1 P_1 + a_2 P_2 + \sum a_j X_j \]  

(1')

and let the rewards function be

\[ W = b_0 + b_1 |R^* - R| + \sum b_k Y_k \]  

(2')

In that equation, the coefficient \( b_1 \) denotes the effect of a deviation of the actual regulation \( R \) from \( R^* \), the regulation expected to prevail in the locality, given its political and other conditions. Substituting, we have

\[ W = (b_0 + b_1 a_0) - b_1 R + b_1 a_1 P_1 + b_1 a_2 P_2 + \sum b_1 a_j X_j + \sum b_k Y_k \]  

(3)

a reduced-form equation that can be calculated after an empirical estimation of a general equation of the form

\[ W = c_0 + c_1 P + c_2 P_1 + c_3 P_2 + \sum c_j X_j + c_k Y_k. \]  

(4)

After estimating such an equation, the \( c \)-coefficients of equation (4) can be decomposed into the \( a \)- and \( b \)-coefficients of equation (3). Because

\[ b_1 = -c_1, \]  

(5)

we obtain the other coefficients through the transformations

\[ a_1 = \frac{c_2}{b_1} = \frac{c_2}{c_1}. \]  

(6)
The constant terms $a_0$ and $b_0$ cannot be determined, but their magnitude is, in any event, not sought. Hence, the estimation of (4) yields, after transformations (5)--(9), the coefficients $a$ and $b$ except for the constant terms. The terms $b_1$, which describes the effects of the deviation in regulation, can be estimated by $c_1$ even without a transformation.

Measures for the statistical significance of coefficients are calculated from the variance for the ratio of two separate regression coefficients $r = \frac{s}{t}$ according to

$$\var r = \frac{1}{t^2} \var s + \frac{s^2}{t^4} \var t - \frac{s}{2t^3} \cov(t, s).$$

### 4. Empirical investigation

For a statistical analysis of the budget consequences to different code strictnesses, an unusually good data set is available for about 1100 American cities and towns, collected in a 1970 survey of building codes by the International City Managers Association (ICMA), and described by Field and Rivkin (1975), and Oster and Quigley (1977). Additional data on housing construction and demographics originates with the Census Bureau Survey of Housing (1960, 1970) and with the U.S. Department of Labor (1972, 1975).

The reward variable $W$ is defined by three alternative measures: the agency's budget per capita of local population; the average salary of employees; and the salary of the agency chief. The strictness of Regulation $R_i$ is defined for each city or town by reference to the major potential code restrictions in a building code, fourteen in number, which were listed by the Douglas Commission (1968) in its blue-ribbon report on impediments to housing construction. These restrictions are weighted by their costliness in terms of additional cost to construction. Let there be an index of strictness for codes defined as
\[ R_t = \sum_{j=1}^{14} C_m \]

where

\[ C_m = \text{relative costliness of restriction of technique } m \text{ to construction firms, with mean cost defined as } \bar{C} = 1. \]

The strength of interest groups, \( P_1 \), is described by proxies. For the unions it is the number of unionized construction workers as a percentage of population, normalized by the average national percentage of unionized construction members in the population. For construction firms, \( P_2 \) is the concentration ratio of construction firms, defined here as the share of the large firms in construction employment, weighted by their average size, and normalized by the national average.

Several other variables corresponding to \( Y_k \) in (2') are included in equation (3) to allow for alternative sources of variation in rewards; the interpretation of their coefficients is interesting in itself. A first question is whether a locality's 'ability to pay' affects the actual disbursement of salaries and budgets. The median value of houses is used as a proxy for fiscal ability, given the prominence of property taxes in local revenues.

A second question is whether salaries compensate in some form for a particularly heavy work load. Such effort is measured by the number of building permits processed per employee, weighted, in order to account for different complexities of construction types, by the average dollar construction volume associated with each permit. Similarly, a higher quality of employees may command higher salaries. For 'quality' we use as proxies the years of schooling of entry level employees and the requirement of certifying examination for employment.

A related question is whether public employees' organized strength and job security lead to higher compensation. This would be reflected by a positive contribution of an employees' union and of a civil service status.

The other set of control variables, corresponding to \( X_j \) in equation (3), includes local economic conditions which may affect the strictness of building regulation. Where housing is in short supply, building codes may be less restrictive in order to encourage construction. Variables for these conditions in the housing market are vacancy rates, construction volume, and the increase in population.

Furthermore, the political constitution of a locality and the appointment process of its building department chief may affect regulation by affording an agency a varying degree on insulation from the political process. A city manager form of government may be less subject to interest group pressure than an elected mayor with executive powers. Similarly, the agency itself
may be less protected from local politics when its head is a political appointee subject to continuous recall, rather than officiating with a secure term of office.

Finally, it is also possible that the political philosophy prevailing in a locality may have an effect. A conservative political attitude, associated as it often is with opposition to government regulation, may thus influence agency policy. Hence, a variable to control for such an effect — if it exists — is introduced.17

5. Findings

The results of the regression estimation, reported in Table 1, are consistent with the hypothesis that rewards are related to regulatory policy. Considering the large number of observations, the equations show a reasonably high $R^2$, particularly the salary equations. The coefficients in the second row in Table 1 show the measures for material rewards to be negatively associated with non-conforming building codes. They are of good size, and statistically significant. To illustrate their meaning: the budget allocation to a strict regulator who, for example, prohibits all fourteen code items ($R = 14$) where a strictness of, say $R = 7$ would conform to the locality’s interest group strengths, is $.13$ lower per capita of population than that of a ‘conforming’ regulator, a difference of 4.2%.18 For the average salaries of employees, the same comparison finds salary lower by $350$, corresponding to a 4.1% decrease. Similarly, the salary of the head of the agency is found to be $420$ lower than in a conforming agency. Such smaller budget and salaries are not in response to an absolute strictness of regulation, but for strictness relative to local interest group strength. Thus, when the equations are expressed in terms of absolute strictness, their $R^2$ is found to be significantly lower.19

The results for the $a_j$ and $b_j$ coefficients of the other variables are also interesting. A first observation is that a locality’s wealth — as measured by the median value of houses — is not particularly strongly associated with compensation to its employees. Second, the coefficient for the work load of an agency employee is found to actually have some positive relation to salaries, but none can be shown for budgets. This suggests that the same causes that leave some agencies relatively overworked may also leave them relatively under-budgeted. There is, furthermore, no positive association of rewards with employee years of schooling, though salaries are higher where qualifying examinations are required.

Third, the results suggest an impact of the organizational clout of employees in securing rewards to themselves, in that some fairly good-sized positive associations of employee unions with salaries — though not with
Table 1. Coefficients of reward equations

<table>
<thead>
<tr>
<th></th>
<th>Budget per capita</th>
<th>Average employee salary</th>
<th>Agency head salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant ($b_0 + a_0 b_1$)</td>
<td>-43.11</td>
<td>-209.4</td>
<td>-844.9</td>
</tr>
<tr>
<td></td>
<td>(.2966)</td>
<td>(.7312)</td>
<td>(1.7641)</td>
</tr>
<tr>
<td>Deviation of regulation ($b_1$)</td>
<td>-18.64</td>
<td>-51.72</td>
<td>-59.01</td>
</tr>
<tr>
<td></td>
<td>(2.2179)</td>
<td>(2.9661)</td>
<td>(2.4769)</td>
</tr>
<tr>
<td>Unionization ($a_1$)</td>
<td>27.16</td>
<td>84.93</td>
<td>49.11</td>
</tr>
<tr>
<td></td>
<td>(.4468)</td>
<td>(.9612)</td>
<td>(.4512)</td>
</tr>
<tr>
<td>Industry concentration weighted by construction volume ($a_2$)</td>
<td>-.0015</td>
<td>-.0086</td>
<td>-.0041</td>
</tr>
<tr>
<td></td>
<td>(2.1641)</td>
<td>(2.0791)</td>
<td>(1.8422)</td>
</tr>
<tr>
<td>Median house value ($b_3$)</td>
<td>-.0641</td>
<td>.0419</td>
<td>.0426</td>
</tr>
<tr>
<td></td>
<td>(1.2643)</td>
<td>(1.1942)</td>
<td>(1.4126)</td>
</tr>
<tr>
<td>Building permits/agency employee</td>
<td>12.66</td>
<td>102.9</td>
<td>71.30</td>
</tr>
<tr>
<td></td>
<td>(.7619)</td>
<td>(2.2096)</td>
<td>(1.1284)</td>
</tr>
<tr>
<td>Schooling (years) of employees</td>
<td>-1.4733</td>
<td>-8.6240</td>
<td>-31.12</td>
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<td></td>
<td>(.4007)</td>
<td>(1.1328)</td>
<td>(4.0926)</td>
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<tr>
<td>Qualifying exam requirement for employees</td>
<td>-96.16</td>
<td>211.6</td>
<td>296.3</td>
</tr>
<tr>
<td></td>
<td>(.5129)</td>
<td>(1.6542)</td>
<td>(.7051)</td>
</tr>
<tr>
<td>Employee union</td>
<td>-41.96</td>
<td>468.4</td>
<td>1237</td>
</tr>
<tr>
<td></td>
<td>(.6037)</td>
<td>(2.1154)</td>
<td>(2.1809)</td>
</tr>
<tr>
<td>Civil service status</td>
<td>427.4</td>
<td>-2911</td>
<td>-6404</td>
</tr>
<tr>
<td></td>
<td>(.6584)</td>
<td>(1.4273)</td>
<td>(1.6591)</td>
</tr>
<tr>
<td>Vacancy rate ($a_3$)</td>
<td>.1521</td>
<td>.4662</td>
<td>.4164</td>
</tr>
<tr>
<td></td>
<td>(.3257)</td>
<td>(1.1296)</td>
<td>(1.0477)</td>
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<tr>
<td>Population increase (%)</td>
<td>-.0001</td>
<td>-.0002</td>
<td>-.0004</td>
</tr>
<tr>
<td></td>
<td>(4.2691)</td>
<td>(5.1748)</td>
<td>(6.7192)</td>
</tr>
<tr>
<td>Construction volume/Cap</td>
<td>-2.1741</td>
<td>-1.0944</td>
<td>-2.0381</td>
</tr>
<tr>
<td></td>
<td>(.5044)</td>
<td>(.3976)</td>
<td>(.5166)</td>
</tr>
<tr>
<td>City manager form of government</td>
<td>5.1742</td>
<td>7.2781</td>
<td>9.6544</td>
</tr>
<tr>
<td></td>
<td>(.9207)</td>
<td>(2.1758)</td>
<td>(1.9957)</td>
</tr>
<tr>
<td>Political appointment of agency head</td>
<td>1.9264</td>
<td>-.2761</td>
<td>6.2714</td>
</tr>
<tr>
<td></td>
<td>(.3071)</td>
<td>(.0991)</td>
<td>(.6912)</td>
</tr>
<tr>
<td>Fixed term appointment of agency head</td>
<td>-.0962</td>
<td>-.2941</td>
<td>-6.092</td>
</tr>
<tr>
<td></td>
<td>(.5176)</td>
<td>(.3952)</td>
<td>(1.8761)</td>
</tr>
</tbody>
</table>

$R^2$ .2413 .4096 .3940

(t-statistics in parentheses)

Budgets are found. For civil service status, coefficients are negative and statistically not significant.

Fourth, the political constitution of a locality seems to make a difference. A city manager form of government — usually considered a more professional type of municipal administration — is associated with greater salaries.
to both employees and the agency head. The political nature of the appointment process of the building chief and the security of his tenure, on the other hand, shows mixed results.

Fifth, the 'objective' conditions of the housing market have only limited association with rewards. In fact, salaries and not budgets are lower where the population is growing, but the coefficients are quite small.

6. Summary

The empirical analysis of the building codes for more than 1100 cities and towns sheds light on the budgets and compensation of local building agencies. We find that higher rewards are associated with an agency's employee unionization, work load, qualification of employees, and insulation of agencies from electoral politics.

While these are interesting findings, the primary thrust of the paper is to look at the relation of strictness of regulatory policy and an agency's benefits. It is found that there are material rewards — in terms of salaries and agency budgets — associated with a regulatory strictness that relates to the strengths of a locality's interest groups.

Such a rewards mechanism creates incentives by which building agencies are induced to determine policy and to match the 'supply' of local building code regulation with its 'demand,' — to use the Stigler-Peltzman terminology.

One must be cautious with generalizing these results to other forms of regulation. Federal regulation may be more insulated from pressure groups than the local one due to its greater distance. A similar study for the Federal government and for other forms of regulation would therefore be the next step for research on this issue.

NOTES

1. 'The provision of some building codes, for example, allowing 2'' × 4'' studs to be placed on 24 inch centers rather than 16 inch centers in nonload bearing walls reduces the amount of labor required for these partitions significantly. A carpenter's union would benefit from opposing such a code provision and other similar labor saving code changes' (Keating, 1981).

2. 'A building department is not dramatically visible to the public it serves' (President's Commission on Housing, 1982: 218).

3. In many localities, standard setting authority is delegated to building departments. In others, local legislative bodies approve them upon the recommendation of the departments. Given the technical nature of the code provisions, it is unusual for departmental recommendations not to be approved.

4. For a thorough discussion of these codes and their enforcement, see Field and Rivkin (1975), and Keating (1981).
5. Absolute values are maintained through computer inversion of signs where the parenthesis is negative. In this fashion, it is possible to use an OLS estimation over absolute values. A quadratic reward function would also be possible, since it transforms deviations into positive terms. However, this creates problems in defining a reduced form of the type-(3).

6. If the error terms $\mu$ and $\epsilon$ for equations (1') and (2') are assumed to be homoscedastic and uncorrelated with the regressors, the composite error term for (3) $V = b_1\mu + \epsilon$ has the same properties.

7. Data made available by R. Ventre, National Bureau of Standards, and J. Quigley, both of whose help is gratefully acknowledged.

8. Unless otherwise noted, data is from ICMA file, described in note 7.

9. It would be helpful to have, in addition, the relative share of the building department's budget in the total municipal budget. To obtain and properly match these figures unambiguously involves an investment in data collection that was beyond the scope of this study.

10. The code provisions are: Nonmetallic sheathed electrical cable; prefabricated metal chimneys; preassembled electrical wiring; wood roof trusses placed 24" apart; plastic pipe in plumbing systems; bathrooms or toilet continuous air space; single plates in non-load-bearing interior partitions; $2" \times 3"$ studs in non-load-bearing interior partitions; $2" \times 4"$ of 1" in lieu of corner bracing; wood frame exterior walls in multi-family structures; preassembled drain, waste, and vent plumbing; party walls without continuous air space; copper pipe requirement in plumbing; $2" \times 4"$ studs 24" on center in non-load-bearing interior partitions.

11. The weight for the cost of each restriction is based on the cost listing by the Douglas Commission (1968: 271 ff.). Since these are incomplete for several of the restrictions, they are extrapolated in these cases by taking the ranking given to their importance by home manufacturers in a survey (Field and Rivkin, 1975: 82), and using those restrictions for which both ranking and cost figures are known in order to extrapolate those for which only rankings are available.

12. Different levels of enforcement might enter into the definition of regulatory strictness. However, enforcement is more of an issue in housing codes, where considerable discretion is exercised and where hence improper influence may be brought on inspectors. On the enforcement of the latter, see Ross and Thomas (1981) and Howe (1981).

13. Figures from U.S. Department of Labor (1972, 1975); made available by John Quigley.

14. Data from U.S. Department of Commerce (1972) for SMSA's made available by John Quigley; large firms defined as those above 100 employees. The ratio is weighted by the average volume of construction activity for firms, by SMSA. The labor and firm measures are not additive, even if normalized. In a related study on industry structure and regulatory policy, alternative measures for the strengths of construction firms were tested for the explanatory power on the strictness of regulation. Those included total volume of construction, average size of firms, the numbers of firms, and others. The concentration ratio, besides being the measure favored in theories of industry structure, showed also the strongest statistical association with regulation. See Noam (1983).

15. Housing values may be somewhat affected by the strictness of regulation. Since these values, however, tend to be primarily determined by regional rather than local demand and supply conditions, this interrelation is not pursued.

16. The existence of an employee union and of a civil service status is represented by two variables that take the value of 1 or 0.

17. As measured by voting for Barry Goldwater in the 1964 Presidential Election. The code data are for the year 1970, and reflect the codification of the preceding few years; thus the 1964 voting figures — in an election where the political philosophies of the candidates with respect to regulation are distinct — appear to be a good proxy for the political conservatism that existed in a locality during the period in which the code was set.

18. Regulatory strictness, weighted by the costliness of each restriction, can take values be-

REFERENCES

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between 0 and 14. A strictness of 14 where 7 is expected is hence a deviation of 7, to be multiplied by the coefficients in the second row of Table 1. For the calculation of the percentages, median national values were taken as denominators. The coefficients for budget per capita are given in Table 1 per thousand of population.

19. I.e., if the estimated equations are the rewards functions

\[ W = b_0 + b_1 R + b_2 P_1 + b_3 P_1 + \sum b_k Y_k + \sum a_j X_j, \]

without the generation of absolute values, as described in note 5. \( R^2 \) values are lowered to, respectively for the three measures of reward, .1391, .2712, and .2941.

REFERENCES


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