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Beating the Building Code Burden: Code Enforcement Strategies and Central City Success in Capturing New Housing

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Building codes and code enforcement have been criticized by governmental commissions and academic experts for unnecessarily increasing the costs of new construction in central cities, thereby reducing the ability of builders and developers to provide affordable housing and compete successfully with suburban areas. In this paper, we examine empirically the effects of the stringency of code enforcement on central city housing construction. We show that the code enforcement choices central cities make can limit their ability to compete with suburban areas for new single-family-detached and multi-family housing. We also show that minor changes in strategy will not alter this effect. Analyses presented are based on data on code enforcement practices and housing construction activity between 1985 and 1995 assembled from a nationally representative sample of 155 central cities and their metropolitan areas.

Building codes regulate residential construction in virtually every central city in the United States. These codes consist of standards and specifications designed to provide minimum safeguards in the construction of buildings to protect the people who live and work in them from the dangers of building collapse. While they obviously are important for public safety, building codes have been blamed by a series of national commissions and academic experts for the crisis in affordable housing in the United States and for the inability of central cities to compete successfully for economic growth (e.g., Downs 1991; Dowall and Landis 1982; Dowall 1984; Field and Rivkin, 1976 Fischel, 1990).

Here are what three national commissions had to say. The National Commission on Urban Problems (Douglas Commission) first brought the problem to light in 1969. According to the Commission's final report, *Building the American City*, "…their influence extends beyond the physical relationships that are their primary concern, affecting such diverse matters as employment opportunity, housing opportunity, and local tax rates…. Critics charge that regulations act to reinforce racial and economic segregation, raise the costs of housing and stifle interesting and innovative design" (page 199). President Reagan's Commission on Housing concluded in 1982 that the supply of housing could be increased if cities substantially deregulated the development process (President's Commission on Housing 1982). In 1991, the Advisory Commission on Regulatory Barriers to Affordable Housing came to a similar conclusion. In the Commission's report, *Not in My Backyard: Removing Barriers to Affordable Housing* (1991), it cited building codes and other development regulations as a serious obstacle to affordability. The commission found that "Local building codes often are not geared to supporting cost-effective construction of affordable housing," and that "Virtually all of the construction work in (central) cities consists of infill and rehabilitation rather than

large tracts of new homes built on open land, necessitating that city officials rethink their regulations" (Page 3-1).

The primary targets of regulatory reform and primary subject of most previous research on this subject has been building code standards and, more broadly, restrictive land-use regulations. Building code standards are formulated by three large model code groups and then adopted (and modified in the process of adoption) by states and local governments. (The principal model code group in the East and Midwest is the Building Officials Conference of America—Basic Building Code; in the West, the International Conference of Building Officials—Uniform Building Code; and in the South, the Southern Building Code Congress International—Southern Standard Building Code.) Land-use regulations are embodied in thousands of local zoning, subdivision, and other development regulations. Changing building code standards is a highly technical, tedious, time-consuming, and politically contentious process that often takes years to accomplish. Local development regulations are easier to alter, but substantial change still requires considerable effort (staff and political) to accomplish. As a result of the difficulties of making significant changes in codes, once they have been adopted, little progress has been made in dealing with the problem of unreasonable code standards, as the reports over a twenty-two-year period of the three national commissions indicate.

The impacts of code standards, however, depend not only on the standards themselves but also on the manner in which they are administered. All model codes permit local officials to accept alternate materials or methods that will improve the efficiency and reduce the costs of urban development and rehabilitation. Local officials also have the discretion to enforce codes in a flexible fashion that relaxes standards and other rules that make little sense in given applications but increase costs substantially. This local discretion may provide an important means to alleviate the building code burden on central cities and allow them to compete more successfully for housing construction (and the population that comes with it) within their metropolitan areas.

The conventional wisdom has been that few local governments use the discretion they have available (see, for example, Advisory Commission on Regulatory Barriers to Affordable Housing 1991: 3-7). However, we believe the conventional wisdom may be incorrect. In this paper, we describe the code enforcement strategies being pursued by central cities in the United States and examine their effects on central city success in capturing new housing construction within their metropolitan areas. We show that enforcement strategies vary widely, and that a number of local governments do use the discretion they have available to facilitate new construction. Our analyses indicate that strict enforcement does, in fact, hinder the ability of central cities to capture a larger share of the market for new single-family-detached and multi-family housing within metropolitan areas. Furthermore, we show that minor changes in strategy, such as increasing the flexibility with which codes are enforced, will not alter this effect. Instead, central cities that have embraced a strict approach to enforcement will need to completely rethink their enforcement strategies, if they want to be more successful in competing with suburban areas for new housing construction.

The paper is organized as follows. In the next section we describe the data collection procedures we used to gather information on code enforcement and to explore the effects of enforcement on housing construction in central cities relative to their metropolitan areas. We then present our conceptualization of code enforcement systems and look at the code enforcement strategies actually being employed by central cities. We then report the results of analyses of the association of code enforcement strategy with housing construction. The paper concludes with a discussion of the implications of the findings for central city code enforcement policy.

The Data

In order to characterize the enforcement actions of central cities and their effects on housing construction, we extracted data for 155 central cities from a national database assembled in 1995 through a mail survey of city and county building code enforcement agencies (see Burby, May and Paterson 1998). The response rate for the mail survey was 82 percent after a post card follow-up and two additional follow-ups with replacement questionnaires. In order to provide a representative profile of central city code enforcement and its effect on housing construction, the sample data are weighted on the basis of each state's proportion of the total number of central city governments in the United States. Comparison of the sample of 155 central cities with the universe of 362 central cities in the U.S. in 1990 indicates that the sample over-represents larger central cities. However, the sample of central cities does not differ from the remainder of central cities in terms of per capita income in 1990, or the percentage of population growth, percentage of income growth, and percentage of employment growth between 1980 and 1990. Thus, we believe the sample data are reasonably representative of all central cities.

Central city success in attracting single-family and multi-family housing construction, our dependent variables, is measured with respect to the number of housing units constructed in each central city relative to its surrounding metropolitan area. For each type of housing, we calculated the per capita ratio of building permits issued by central cities over the eleven-year period 1985-1995 in relation to the corresponding permits issued for the metropolitan area in which the central city is located. Data from individual jurisdictions in metropolitan areas were spatially aggregated for each year of the study period based on the 1993 Census definition of each metropolitan area. The data were aggregated over an eleven-year period in order to include a complete business cycle that takes into account periods of peak construction, downturns and upturns, and periods of recession. Per capita values are used to control for variation across central cities and metropolitan areas in population.

The measurement of enforcement practices, strategies, and effort is discussed in the following section. To isolate enforcement effects on housing construction, we used OLS regression analysis in which we controlled statistically for other factors, in addition to enforcement, that can affect the success of central cities in capturing single-family-detached and multi-family housing construction within their metropolitan areas. The selection of control variables is based on literature and theorizing about key decision-making considerations for homebuilders and multi-family developers. In this regard, a

key premise is that construction decisions hinge on considerations of financial feasibility. That is, housing projects will not be undertaken unless the cost of a potential project is less than expected project value. Cost depends on the cost of inputs—land, labor, and materials—used for capital outlays and for operating expenses and indirectly on the cost of local public facilities and services. Value depends on expected sales price and rental income. This, in turn, is a function of market conditions—local demand and supply, local quality of life and climate for development, credit availability, and national economic conditions. Based on this conceptualization, we formulated indicators to capture the effects that cost and value can have on construction activity in central cities relative to their metropolitan areas. In addition, we take into account the potential effects of the size of each metropolitan market area and its economic attractiveness relative to other metropolitan areas. Measurement of the dependent, policy, and control variables is described further in the appendix.

Code Enforcement Practices and Strategies

Our conceptualization of building code enforcement draws on previous theorizing about regulatory enforcement (e.g., see Kagan 1994) and builds on our earlier work on code enforcement systems and their effects on compliance with code standards and on economic development (e.g., see Burby, May and Paterson, 1998; May and Burby, 1998; and Burby et al. 2000). Here we focus on three related enforcement concepts: practice, strategy, and effort. An *agency practice* is the most fundamental of these concepts. Practices can be easily observed in the field. These consist of such things as supervising field staff, carrying out inspections, issuing notices of violation and field citations, and providing technical assistance. Agency *strategy* consists of combinations of the practices that agencies pursue, either explicitly or implicitly, to enhance their effectiveness in bringing about compliance. For example, an agency can pursue a strict enforcement strategy that involves the use of a number of coercive practices, or it can emphasize other practices, such as the use of incentives. Finally, *effort* refers to the vigor with which agencies pursue enforcement. In this regard, some agencies are proactive in employing enforcement practices and strategies while others are more dormant.

To measure enforcement practices we created a set of indexes that correspond to different actions identified in the enforcement literature: standardization and supervision, deterrent enforcement, technical assistance, discretionary enforcement, and use of incentives. The items within each category of practice are shown in Table 1. For each category, we created a summated index from the individual items, based on central city enforcement agency reports of the use of the different tools. Summary statistics for each index and measures of reliability (Chronbach's alpha) are provided in the appendix.

Several points about the enforcement practices that we measured are important to note. First, these are measures of the use of different practices and not whether they simply exist on paper or not. As such, they reflect actions of code enforcement agencies. Second, the amount of effort put into different practices is not included in these measures. Third, by constructing indexes of different practices our analysis is at a more aggregate-level than considering individual practices one-by-one. This has an advantage

of increasing the reliability of measures and enables us to talk about categories of practices that are consistent with those discussed in the regulatory literature.

Table 1. Enforcement Practices of Central City Code Enforcement Agencies

1. Standardization and Supervision Practices

- Inspection checklists and forms
- Agency policy or procedure manual
- Periodic review of inspectors' work
- Inspectors required to consult supervisor/building official on hard calls
- Rotate field inspectors' territories
- Intensive training of inspectors in agency policy and procedures
- Annual performance evaluation of inspectors
- Follow-up field inspections of inspectors' work
- Productivity measures used to evaluate inspectors' work

2. Deterrent Practices

- Notice of violation
- Notice of corrective action
- Stop work order
- Revocation of building permit
- Revocation of certificate of occupancy
- Temporary restraining order
- Preliminary injunction
- Permanent injunction
- Infraction field citation/fine
- Misdemeanor prosecution/fine
- Fine levied for working without permit in past 12 months
- Fine levied for not following approved plan in past 12 months
- Fine levied for not following code provisions in past 12 months

3. Technical Assistance Practices

- One-on-one technical assistance during plan review
- One-on-one technical assistance at construction site
- Booklets describing code enforcement procedures and policies
- Workshops to explain code provisions
- Newsletter, bulletin
- Self-contained slide, audio, or video cassette modules

4. Discretionary Practices

- Inspectors authorized to bluff in order to attain compliance
- Inspectors allowed to be lenient when life safety not threatened
- Inspectors can spend extra time on site to develop good relations with regulated
- Inspectors can badger contractors who are chronic violators
- Inspectors can relax standards based on extenuating circumstances

5. Incentive Practices

- Prior record of violator taken into account in decision to prosecute

- Attitude of violator taken into account in decision to prosecute
- Less frequent inspections
- Bend over backward to be cordial
- Other incentives
- Modify standards for firms with good records with approval of higher authority

Our measures of effort that agencies put into different activities are based on ratings provided by code enforcement agencies. These provide relative ratings among seven different categories of activities (public information, surveillance, plan checking, inspection, legal prosecution, technical assistance, and public relations).

The enforcement strategy of a given agency can be characterized in terms of the mix of different practices that the agency chooses to pursue. We think of strategy as a bundle of discrete choices concerning such things as inspection, technical assistance, and use of deterrence. In order to identify enforcement strategies in practice, we employed iterative cluster analysis to identify three groupings of code enforcement agencies with similarities in use of different practices.[1] By examining the practices employed by the central cities in each group, we could deduce the strategy it employed to bring about compliance with code standards. We labeled these strategies as strict, creative, and accommodative.

The cities that employ each strategy are shown in Table 2. An accommodative strategy was being used by the largest percentage of cities (43 percent), followed by cities using a creative strategy (29 percent), and those using a strict strategy (28 percent). The attributes of each cluster are shown in Table 3. The first set of entries lists the mean scores for the practices used to label each strategy. Each set of practices is an index measured on a scale of zero to 100. Central cities that used a strict enforcement strategy are noteworthy for their emphasis on standardization of fieldwork and provision of technical assistance. Those that employed a creative enforcement strategy stand out for their use of flexible enforcement practices and use of incentives. Both strict and creative strategies feature relatively large doses of deterrence. The cities that employed an accommodative strategy used more flexible enforcement practices than the strict enforcement group, but used fewer of each of the other types of practices than cities that used strict or creative strategies. This is also reflected in enforcement effort, which tended to be lowest among the cities that pursued an accommodative strategy.

Our characterization of enforcement strategies is consistent with other studies in showing that agencies employ a mix of practices. What we found, however, differs in important details from the stylized versions of enforcement strategy found in the literature. In particular, deterrence tends to be employed in equal measure by agencies that employed strict and creative enforcement strategies and both groups of agencies made a strong effort to enforce code requirements. What separates the strategies of these agencies is the use of flexibility and incentives. These are added to the enforcement strategy of agencies that have to cope with a more highly politicized environment and have more opposition to strong enforcement from constituencies such as builders, developers, and contractors (shown in the bottom rows of Table 3).

Our finding that a large proportion of code enforcement agencies follows an accommodative strategy is not as easily characterized and not found as a separate strategy in the literature. It might be considered as similar to what Kagan (1994) labels as a retreatist approach for which regulatory officials, with more limited support for strong enforcement, merely create an appearance of enforcement. As shown in the bottom rows of Table 3, an accommodative strategy is likely to also be a response to economic circumstances. Cities that used an accommodative strategy, as a group, tended to be poorer, growing at a slower rate, and experiencing weaker economies than cities that used strict or creative enforcement strategies.

Table 2. Enforcement Strategies Used by U. S. Central Cities, 1995

Enforcement Strategy[a]			
Strict (N= 43 – 28%)	**Creative(N=45–29%)**	**Accommodative (N= 67 – 43%)**	
Abilene	Albany	Akron	Peoria
Albany	Amarillo	Albuquerque	Pittsburgh
Allentown	Ann Arbor	Baltimore	Portland, ME
Anchorage	Bloomington	Beaumont	Rapid City
Asheville	Boston	Billings	San Antonio
Austin	Brockton	Binghamton	Santa Fe
Bakersfield	Cedar Rapids	Bridgeport	Springfield
Baton Rouge	Cincinnati	Brownsville	Syracuse
Bellingham	Dayton	Bryan	Tacoma
Birmingham	Duluth	Buffalo	Tallahassee
Boise	Eau Claire	Charleston, WV	Terre Haute
Charleston, SC	Eugene	Cleveland	Toledo
Chicago	Erie	Columbia	Trenton
Columbus	Fargo	Corpus Christi	Tucson
Dallas	Fort Lauderdale	Danbury	Tyler
El Paso	Gainesville	Davenport	Tuscaloosa
Fort Wayne	Gary	Des Moines	Utica
Huntsville	Grand Rapids	Detroit	Waco
Jackson	Greensboro	Dothan	Waterbury
Lake Charles	Huntington	Dubuque	Wilmington
Las Cruces	Indianapolis	Flint	Worcester
Little Rock	Las Vegas	Fort Worth	Yuma
Los Angeles	Lynchburg	Great Falls	
Madison	Lincoln	Greenville	
New York City	Macon	Houston	
Orlando	Milwaukee	Jacksonville	
Philadelphia	Minneapolis	Kalamazoo	
Phoenix	New Bedford	Knoxville	
Reno	Oakland	Lancaster	
Riverside	Portland, OR	Lansing	
Rochester	Providence	Laredo	
Sacramento	Provo	Lawrence	
Salt Lake City	Richmond	Lexington	
Santa Barbara	Roanoke	Louisville	
San Diego	Rochester	Lubbock	
San Francisco	Rockford	Manchester	
San Jose	Salinas	Mansfield	
Spokane	Santa Rosa	Miami	
Stockton	Savannah	Monroe	
Tampa	Seattle	Montgomery	
Tulsa	Sioux City	Muncie	
Vineland	Sioux Falls	New Orleans	
Virginia Beach	South Bend	Odessa	
	Springfield	Oxnard	
	Vallejo	Paterson	

facilitative practices (flexible application of rules and use of incentives). Accommodative enforcement strategies use low degrees of both systematic and facilitative practices.

Table 3. Comparison of Cities with Different Enforcement Strategies

Characteristic	Mean Values For Clusters Comprising Different Strategies [a]: Strict Enforcement Strategy	Creative Enforcement Strategy	Accommodative Enforcement Strategy
Enforcement Practices that Comprise the Strategy			
Standardization of Fieldwork	85	65	53
Deterrent Enforcement Practices	58	59	46
Technical Assistance Practices	75	56	36
Flexible Enforcement Practices	40	72	47
Incentive Practices	29	46	10
Enforcement Effort Associated with the Strategy			
Overall Enforcement Effort	74	74	67
City Characteristics Associated with Use of Each Strategy			
Population, 1990	623,780	195,030	210,806
Population Growth, 1980-89 (percentage)	15	8	5
Median Per Capita Income, 1989	$14,084	$13,070	$12,319
Unemployment Rate, 1990 (percentage)	6.8	7.1	8.3
Median Home Value, 1990	$96,847	$74,960	$70,620
Housing Built Prior to 1940 (percentage)	18	26	26
Political Demand for Enforcement	51	53	39
Political Opposition to Enforcement	19	25	16
Politicization of Enforcement	2	16	15
Cluster Sample Information			
Number of Cases (weighted)	43	47	65
Percent of Sample	28	30	42

Notes:

[a] Except for the cluster sample information, cell entries are the mean values of designated items for central cities that comprise the designated strategy (cluster) for the weighted sample of central city enforcement agencies. The difference of means F-test is statistically significant at $p < .05$ for all items except housing built prior to 1940, political opposition, and politicization, which are significant at $p < .10$.

Impacts of Enforcement Choices on Housing Construction

At issue is the question of whether a strict enforcement strategy has constrained housing construction in the central cities that have used it. Equally important is the question of whether creative and accommodative strategies, each of which employs more flexibility in dealing with builders and contractors, has mitigated this adverse effect in the cities where these strategies have been employed. To investigate these questions, we ran multiple regression models that control for other factors that can affect central city success in capturing housing construction activity within their metropolitan areas.

The results of these analyses are summarized in Table 4. The columns labeled model A use strict and accommodative dummy variables to estimate the effects of central city approaches to enforcement. The columns labeled model B look at the effects of strict and creative enforcement strategies. Our discussion of the model findings looks first at the effects of enforcement strategy on single-family detached housing and then at effects on multi-family housing.

Model A indicates that relative to a strategy of creative enforcement (the omitted dummy variable), strict enforcement had little effect on central city success in attracting single-family detached housing over the period 1985-1995, while an accommodative strategy had a fairly strong, statistically significant positive effect. The positive effects of the accommodative strategy are also shown by the results of Model B, which shows that relative to accommodative enforcement, both strict and creative enforcement have statistically significant negative effects on the proportion of single-family detached housing central cities were able to capture. In contrast to enforcement strategy, we find that enforcement effort has only a modest (and statistically insignificant) negative effect on the construction of single-family-detached housing in central cities relative to their metropolitan areas. We turn to this finding in more detail below.

The single-family-detached housing model summarized in Column B indicates that the negative effect of a systematic approach to enforcement is not ameliorated by the greater employment of flexibility and incentives associated with a creative enforcement strategy. Both strict and creative enforcement strategies have an equivalent negative effect on the ratio of single-family detached housing captured by central cities. This occurs because both strategies rely heavily on the use of deterrent enforcement practices. In a separate analysis employing the index of deterrent practices (see Table 1) in place of enforcement strategy we found that deterrence is negatively associated with construction of single-family detached houses (beta = -.15, $p < .01$). In contrast, an accommodative strategy (as shown in Model A) that is characterized by little attention to deterrence has a positive effect on the construction of new homes.

In the case of multi-family housing, we find that enforcement strategy has little effect on the ability of central cities to capture new multi-family housing units. However,

Table 4. Multiple Regression Models of Success of Central Cities in Capturing Housing Construction Activity in Metropolitan Areas, 1985-1995

	Standardized Regression Coefficients[a]			
	Single-Family Housing Units		Multi-family Housing Units	
Variables	**Model A**	**Model B**	**Model A**	**Model B**
Enforcement choices				
Strict enforcement strategy	-.01	-.14**	.06	.10
Accommodative enforcement strategy	.15**	---	-.04	---
Creative enforcement strategy	---	-.14***	---	.04
Enforcement effort	-.04	-.04	-.18**	-.18**
Other explanatory variables:				
Demand for housing				
Population-proportion of metropolitan population living in city, 1990	.42***	.42***	.22**	.22**
Income-ratio of city to metropolitan area median per capita income, 1990	.28***	.28***	.13	.13
Spending power – ratio of city to metropolitan area per capita retail sales, 1982	.20**	.20**	.44***	.44***
Population growth (metro area), 1980-1989	-.002	-.002	-.03	-.03
Income growth per capita (metro Area), 1980–1989	-.04	-.04	.09	.09
Development opportunities				
Land area-percentage increase in City land area, 1980-1989	.10*	.10*	-.004	-.004
Obsolescence-1990 ratio of city to metropolitan area percentage of housing built prior to 1940	-.28***	-.28***	-.17*	-.17*
Housing shortage (metro area), 1990	.09*	.09*	.06	.06
Development costs				
Cost of land-ratio of city to metropolitan area population density, 1990	.03	.03	.09	.09
Construction cost (metro area), 1993	.16**	.16**	.06	.06
Property tax rates (metro area), 1990	.15**	.15**	.08	.08
Quality of life				
Crime – ratio of city to metropolitan Area number of crimes per capita, 1990	.01	.01	-.002	-.002
Poverty – ratio of city to metropolitan area increase in percentage of persons in poverty, 1980-1989	-.12**	-.12**	-.09	-.09
Schools- percent of students in Private schools	-.11*	-.11*	.02	.02

Standardized Regression Coefficients

Variables	Single-Family Units		Multi-Family Units	
	Model A	Model B	Model A	Model B
Metropolitan area controls				
Population (metro area), 1990	-.09	-.09	.02	.02
Unemployment rate (metro area), 1990	-.02	-.02	.02	.02
Development constraints-miles of shoreline per capita (metro area)	.03	.03	.01	.01
Model statistics				
Adjusted R2	.62	.62	.26	.26
F-value	12.49	12.49	3.51	3.51
Significance	.001	.001	.001	.001
Number of cases	141	141	141	141

* p<.10 ** p<.05 *** p<.01 (one-tailed test)

[a] Dependent variables are ratios of central city construction activity per capita to metropolitan area construction activity per capita, 1985-1995.

enforcement effort does. Central cities that were more proactive in enforcement were less able to capture multi-family housing than were those that exerted less effort. Enforcement effort summarizes activities such as public information about code requirements, frequency of plan checking and building inspections, and vigor with which legal prosecution is pursued. Apparently these activities tend to discourage multi-family housing, while the practices that comprise the measures of enforcement strategy do not have such an effect. Decomposition of the effort index into its constituent parts indicates that the effort enforcement agencies put into public information about code standards, plan checking, inspections, and legal prosecution accounts for the negative effect. Effort expended on surveillance to detect building without a permit, technical assistance, and public relations does not have a negative effect on the construction of multi-family housing.

There are two possible reasons for differences in the effects of enforcement strategy and effort on the construction of single-family-detached and multi-family housing. First, homebuilders active in central cities may be smaller firms that are more sensitive to the hassles and costly delays implied by the use of deterrent enforcement practices such as stop work orders. Firms building multi-family housing may be larger and more adequately financed, so that they can take these costs in stride. In addition, they may be more professional in orientation, so that they are less likely to violate code standards and less subject to the costs of deterrent enforcement actions. Second, however, enforcement effort also implies that firms are less likely to be able to evade the costs of complying with code standards. For example, in our previous research, we found that enforcement effort is a strong predictor of the degree of compliance with code requirements that enforcement agencies have been able to achieve (Burby, May and Paterson 1998 and Burby et al. 2000). If they are unable to evade the extra costs of complying with code standards, developers of multi-family housing may shift their

construction projects to suburban jurisdictions where these costs are less burdensome or where less effort is expended on securing compliance. These explanations are mutually consistent and seem plausible given the likely characteristics of the firms constructing single-family-detached and multi-family housing in central cities.

Policy Implications

This paper has examined the effects of building code enforcement strategy and effort on the ability of central cities to capture single-family-detached and multi-family housing construction within their metropolitan areas. We have seen that in response to pressures in their operating environment agencies pursue different strategies in their attempts to attain compliance with building code standards. Larger cities and those with strong political support for enforcement tend to pursue a strategy of strict enforcement, which emphasizes standardization of enforcement tasks, provision of technical assistance, and the use of deterrence (e.g., stop work orders, fines, etc.) to bring about compliance. Smaller cities that want to exert a strong effort on enforcement, but have to cope with more politicization of enforcement and greater opposition from various constituencies tend to employ a creative strategy of enforcement. This strategy also emphasizes the use of deterrence, but it tolerates more flexibility in the way inspectors and plan checkers actually apply it. Smaller cities that are less intent on making a strong enforcement effort, typically in response to economic stagnation and political pressures to avoid antagonizing economic interests, tend to use an accommodative enforcement strategy. This strategy involves the use of fewer enforcement practices and less effort in undertaking various enforcement tasks than agencies pursuing strict or creative enforcement strategies.

These choices central cities make about enforcement have a direct effect on their ability to compete for housing construction within their metropolitan areas. In general, the more vigorously cities pursued code enforcement, either in terms of the use of strict or creative enforcement strategies, or in terms of the effort they devoted to enforcement, the less successful they were in capturing new housing construction. Enforcement strategies have this effect on the construction of single-family-detached housing units, while code enforcement effort suppresses multi-family housing. Contrary to our expectations, the greater flexibility and use of incentives that characterizes a creative enforcement strategy does not lessen the adverse effects of deterrent enforcement practices, which the creative and strict enforcement strategies have in common.

Our findings suggest that if central cities cut back on the use of deterrent enforcement practices, such as stop work orders and fines, they will enhance their ability to capture a greater proportion of single-family detached housing within their metropolitan areas. This is important, because our earlier research indicates that of all types of private-sector construction (i.e., single- and multi-family housing, retail, office, and industrial), central cities are doing worst in capturing single-family housing (Burby et al. 2000). The impacts of this poor performance are exacerbated by the fact that such housing accounts for about half of all private-sector construction activity within metropolitan areas. In contrast, multi-family housing accounts for just over 10 percent of

construction activity, and central cities have held their own with suburban areas in competition for multi-family projects.

Because of the importance of enforcement effort in attaining compliance, we think it would be unwise for central cities to cease being proactive about code enforcement in order to garner a higher proportion of multi-family housing within their metropolitan areas. If our supposition that effort reinforces the adverse effects of obsolete code standards that raise construction costs are correct, however, these findings do reinforce the need for central cities to take a hard look at the construction requirements embodied in their building codes. Our findings provide indirect support for the conclusion that multi-family housing construction could be stimulated if code standards were less onerous.

In conclusion, the building code burden on central city housing construction is real. Code enforcement choices cities have made have reduced their ability to capture both single-family-detached and multi-family housing. Central cities can lessen this effect on the construction of single-family detached housing if they de-emphasize the use of deterrence as a way to bring about compliance. This can be done without threatening the attainment of compliance with code standards, as long as cities continue to mount a vigorous enforcement effort. A continuing cost of vigorous enforcement, however, will be a somewhat reduced ability to capture multi-family housing. To counter this unwanted effect, cities should pay close attention to the cost implications of the code standards required in multi-family construction. We suspect that by eliminating costly building code requirements that contribute little to building safety, cities can enhance their ability to capture multi-family housing construction. In the meantime, however, we have shown that cities can begin to beat the building code burden for single-family housing by reorienting their enforcement practices to avoid the construction delays and nuisance effects that accompany the use of sanctions to bring about compliance with code standards. This would be no small accomplishment.

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Notes

[1] See Aldendefer and Blashfield (1984) for an overview of cluster analysis. We employed the K-means statistical routine in the SPSS for Windows statistical package. The clustering is based on the Euclidean distance between the unstandardized measures of each of the five types of enforcement practices listed in Table 1 (each measured on the same scale of 0 to 100).

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Appendix. Measurement of Variables

Variable	***Source*** ***Mean (s.d.)***	***Measurement***
Construction activity		
Central city single-family housing success ratio– number of units	U.S. Census 1985-1995 .55 (.38)	Number of central city single-family detached houses constructed 1985-1995 per capita/ number of metropolitan area single-family detached houses constructed 1985-1995 per capita (sq. rt. Transformation used in analysis) Note: in cases where data for a given year were missing, the mean of the 11-year period was substituted for that value. In no cases was more than one year of data missing for a city in the sample.
Central city multi-family housing success ratio – number of units	U.S. Census 1985-1995 1.06 (.50)	Number of central city multi-family housing units constructed 1985-1995 per capita/ number of metropolitan area multi-family housing units constructed 1985-1995 per capita (sq. rt. transformation used in analysis) (see above)

Enforcement		
Strict enforcement strategy	Derived by authors using approach explained in May and Burby 1998 .28 (.45)	Derived from Cluster Analysis of indexes of enforcement practices (see May & Burby 1998). Coded as a dummy variable: 1 – agency employs strict enforcement strategy; 0 – agency employs another enforcement strategy.
Creative enforcement strategy	Derived by authors using approach explained in May and Burby 1998 .30 (.46)	Derived from Cluster Analysis of indexes of enforcement practices (see May & Burby 1998). Coded as a dummy variable: 1 – agency employs creative enforcement strategy; 0 – agency employs another enforcement strategy.
Accommodative enforcement strategy	Derived by authors using approach explained in May and Burby 1998 .42 (.49)	Derived from Cluster Analysis of indexes of enforcement practices (see May & Burby 1998). Coded as a dummy variable: 1 – agency employs accommodative enforcement strategy; 0 – agency employs another enforcement strategy.
Enforcement effort	Derived by authors from Burby, May & Paterson 1998 35.6 (6.2)	Index of overall effort a locality makes to enforce building standards. Mean of building official rating (scale 1 to 5) of degree of effort expended by the agency on seven tasks: public relations, surveillance, plan checking, inspection, legal prosecution, technical assistance, public awareness. Alpha = .69
Deterrent enforcement practices	Derived by authors from Burby, May & Paterson 1998 53.2 (18.0)	Index based on use of thirteen different deterrent enforcement practices (see practices listed in Table 1). Alpha = .70
Discretionary enforcement practices	Derived by authors from Burby, May & Paterson 1998 (23.0)	Index based on use of five different discretionary enforcement practices (see practices listed in Table 1). Alpha = .57
Incentive enforcement practices	Derived by authors from Burby, May & Paterson 1998 25.9 (21.2)	Index based on use of six different incentive enforcement practices (see practices listed in Table 1). Alpha = .45
Technical assistance enforcement practices	Derived by authors from Burby, May & Paterson 1998 53.0 (24.1)	Index based on use of six different technical assistance enforcement practices (see practices listed in Table 1). Alpha = .58
Standardization and supervision enforcement practices	Derived by authors from Burby, May & Paterson 1998 65.6 (22.3)	Index based on use of nine different standardization and supervision enforcement practices (see practices listed in Table 1). Alpha = .60
Demand for housing/buildings		
Population-proportion of metropolitan population living in central city, 1990	Derived by authors from U.S. Census (1993c) data .64 (.15)	Transformation: population of central city/population of metropolitan area (sq. rt.)
Income-ratio of central city to metropolitan area median per	Derived by authors from U.S. Census	Transformation: central city median per capita income/metropolitan area median per capita

capita income, 1990	(1993c) data .97 (.10)	income (sq. rt)
Spending power – ratio of city to metropolitan area per capita retail sales, 1982	Derived by authors from U.S. Census (1984) data 1.29 (.33)	Transformation: central city retail sales per capita/metropolitan area retail sales per capita (sq. rt.)
Metropolitan population growth, 1980-1990	Derived by authors from U.S. Census (1993c, 1983) data 823.47 (107.97)	1990 population – 1980 population (sq. rt.)
Metropolitan income growth (per capita), 1980–1989	Derived by authors from U.S. Census (1993c, 1983) data 84.46 (11.42)	1990 median per capita income – 1980 per capita income/1980 median per capita income (sq. rt.)
Development opportunities		
Land area-percentage increase in city land area,1980-1989	Derived by authors from ICMA, 1997 3.89 (1.52)	Land area 1990 – land area 1980/land area 1980 (sq. rt.)
Obsolescence-ratio of city to Metropolitan area percentage of Housing built prior to 1940	U.S. Census, 1993a 1.00 (.03)	Percentage of housing in 1990 built before 1980 (sq. rt.)
Metropolitan housing shortage, 1990	Derived by authors from U.S. Census, 1982, 1992, 1993c) 6.98 (1.37)	Actual 1990 median house value – predicted 1990 median house value with 1990 predicted value = c + 1980 median house value + change in median family income 1980-199). Positive sign indicates housing shortage. (sq. rt.)
Development costs		
Cost of land-ratio of city to metropolitan area population density, 1990	Derived by authors from U.S. Census, 1993b 1.83 (.40)	Population density of central city/population density of metropolitan area (sq. rt.)
Metropolitan residential construction cost, 1993	Ferguson, 1996 .97 (.063)	Metropolitan construction cost index based on relative cost of materials and labor (sq. rt.)
Metropolitan nonresidential construction cost, 1993	Ferguson, 1996 .97 (.061)	Metropolitan construction cost index based on relative cost of materials and labor (sq. rt.)
Metropolitan property tax index, 1990	Boyer, 1989 9.73 (2.99)	Places rated index of property tax rates (sq. rt.)
Quality of life		
Poverty – ratio of city to metropolitan area increase in percentage of persons in poverty, 1980-1989	U.S. Census, 1993c 1 (.03)	Central city percentage of census tracts with 20%+ of households below poverty level income/metropolitan percentage of census tracts with 20%+ of households below poverty level income (sq. rt.)
Crime – ratio of city to metropolitan area number of part 1 crimes per capita, 1990	U.S. Department of Justice, 1992; U.S. Census, 1993c 1.56 (.42)	Total number of Part 1 crimes (murders, rapes, robberies, aggravated assaults, burglaries, larcenies, motor vehicle thefts, and arsons)/central city population
Percent of metropolitan area students in public schools	Boyer, 1989 9.45 (0.28)	Percent of students attending public schools (sq. rt)

Characteristics of metropolitan area:		
Metropolitan population, 1990	U.S. Census, 1993c 797.67 (496.13)	1990 metropolitan population (000) (sq. rt.)
Metropolitan unemployment rate, 1990	U.S. Census, 1993c 6.15 (1.67)	1990 unemployment rate
Development constraints: miles of metropolitan area shoreline	Calculated by authors from atlas maps .066 (.12)	Miles of shoreline (not including small inland lakes) bordering metropolitan area (sq. rt.)

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