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Private Ordering, Social Cohesion and Value: Residential Community Association Covenant Enforcement

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Residential community associations (common interest communities such as condominiums, cooperatives and planned unit developments, as well as properties subject to homeowners associations and architectural review boards) have become the dominant form of ownership for new United States single-family residential units. Community associations typically use covenants, conditions and restrictions (also known as CCRs, C&Rs, deed restrictions or covenants) to impose extensive private-ordered controls over unit owners. This empirical study uses regression analysis of a Web-based community association enforcement practices survey, concluding that more intense private-ordered enforcement is associated with increased unit value and decreased covenant violation levels. It also finds that judicial deference to private-ordered community association enforcement decisions is associated with higher value, and that some measures of social cohesion are associated with decreased covenant violation levels.

Keywords

Homeowners Association, Condominium, Covenant, Private Ordering, Enforcement, Social Cohesion

1. Introduction

Community associations (condominiums, cooperatives, planned unit developments and other types of common interest communities, as well as properties subject to homeowners associations or architectural boards) probably dominate new U.S. housing development – as of 2010, there were 309,600 associations (Community Associations Institute [CAI] 2011) which controlled 18.8% of the housing stock (Mazur & Wilson 2011) (24,800,000 community association housing units [CAI 2011] out of 131,704,954 total U.S. housing units [United States Census Bureau 2010]). Community associations use controls that are established through covenants, conditions and restrictions (CCRs), and similar real estate covenant documents (including master deeds, declarations of condominium and servitudes). Given the multiplicity of near-synonymous names, in the interest of intelligibility, this paper will refer to these entities and their kin as community associations, and to CCRs and their kin as covenants.

While covenant documents are voluminous, their enforcement has been little studied. This empirical paper tests the efficiency of covenant enforcement through regression analysis of a Web-based survey of community association enforcement practices, concluding that more intense private-ordered enforcement is associated with increases in unit value and reduced levels of covenant violations, and examining the associations of various measures of social cohesion.

The law and economics literature posits that covenants provide efficient private ordering because developers, who create them, have an incentive to tailor them to unit buyer desires in order to maximize sale prices (Ellickson 1982, pp. 1547-1551; Heller 2005; Weiser 2003). Spurred by harsh criticism of community association covenants (McKenzie 1994), the empirical literature has found covenants in general (Rogers 2010), as well as homeowners associations (LaCour-Little & Malpezzi 2009) and architectural review boards (Johnson et al. 2009), which enforce them, to be value-adding. Studies of specific covenant types with differing designs have found differing value effects for restrictions on pets (Cannaday 1994), rentals (Somerville et al. 2009) and occupant age (Carter et al. 2013) and for cooperative versus condominium apartment ownership regimes (which feature differences in financing, transfer and rental restrictions) (Schill et al. 2007).

Our paper advances the literature on covenants and value by measuring the effects of enforcement intensity. Academic studies have found homeowners to favor community associations and covenants in principle (Burby 1974; Johnson 2013), as have non-peer reviewed surveys by national polling organizations, sponsored by the leading national community association trade association (CAI 2009; CAI 2012, p. 5). While community association residents in another CAI-sponsored study have found covenants to be well-

enforced (CAI Research Foundation 1999, p. 5), academic studies have found enforcement to lead to discontent (Barton & Silverman 1987, pp. 23-24; Hsieh 2009, p. 76; Johnson 2013; Lombard et al. 2004, p. 10), although residents favor the enforcement of architectural controls (Burby 1974). We show a positive association between the respondent views of association enforcement intensity and value.

Two studies have found ineffective enforcement, although one surveyed just 51 Indiana homeowners (Johnson 2013), while the other used methodology unsophisticated by current standards (Barton & Silverman, 1987, pp. 23-24). Our paper finds that objective measures of enforcement intensity are associated with a reduction in violation levels. In addition, we find that judicial deference to community association decisionmaking is positively associated with value.

Some papers have found that larger and professionally managed associations have higher levels of violations and enforcement, including an early qualitative study (Walker 1984, pp. 156-63) and two empirical studies (Barton & Silverman 1987, p. 24; Lombard et al. 2004, pp. E-1, E-2). However, two studies have found association size to be negatively associated with satisfaction with association responsiveness (Burby 1974, p. 16; CAI Research Foundation 1999, p. 30). None of the papers can distinguish whether higher violation levels reflect higher enforcement levels, or whether underlying violation levels differ. By controlling for enforcement intensity, we find that larger associations (which presumably tend to have professional management) are associated with fewer violations per unit.

A survey literature has associated greater social cohesion (measured as community participation and friendliness) with lower crime (Saegert & Winkel 2004; Sampson et al. 1997; Takagi et al. 2012; Hartnagel 1979, however, found no relationship), older residents (Hartnagel 1979; Saegert & Winkel 2004), higher education levels (Saegert & Winkel 2004; Letki 2008, p. 117), better health (Lochner et al. 1999) and lower poverty (Forrest & Kearns 2001; Letki 2008). Similarly, in the community association literature, unit owner age and income are positively associated with satisfaction with association responsiveness (CAI Research Foundation 1999, p. 30). Violations are positively associated with unit-owner life cycle heterogeneity and percent of renters and negatively associated with owner participation and unit price (the latter two proxies for income) (Barton & Silverman 1987, p. 24). These associations for violations are consistent with the associations for lower social cohesion, in that greater life-cycle heterogeneity is consistent with younger residents, while a higher percent of renters and lower unit price are consistent with lower income.

We advance the neighborhood social cohesion literature by examining the association of enforcement practices and demographic measures with value and covenant violations. Notably, we find that more intense use of negotiation

is negatively associated with violation levels, consistent with the finding by Sampson et al. (1997) that collective efficacy in urban neighborhoods (measured in part by willingness to intervene to sanction violators of neighborhood order) is negatively associated with crime levels. Consistent with earlier studies, we find that median population age is negatively associated with violation levels and that violation levels are negatively associated with unit price. Increased property crime is, not surprisingly, associated with reduced value added by community associations.

Thus, our paper appears to be the first to address the effect of enforcement practices and social cohesion measures on unit value and level of violations.

2. Survey Methodology

2.1 Sample Population, Online Survey, and Response Issues

The Community Associations Institute (CAI), the leading trade association in the field, with about 15,500 members in the US and Canada as of the survey date, provided its 4,500-person e-mail list. E-mail list members received a total of five e-mail notifications of the survey, and those who chose to respond were given access to the online survey by their e-mail addresses. In order to protect anonymity and encourage frank responses, potential respondents were informed that their e-mail addresses would be deleted from the survey responses after the survey was closed.

CAI members include association managers, officers and directors, as well as developers, lawyers, brokers and other professionals who are working in the industry. Developers, lawyers, brokers and other professionals may be working with many developments at once, and may see only crises -- not day-to-day enforcement issues. Therefore, we requested that only association managers, officers and directors answer the survey, and that only one person per association respond. Few associations were likely to have multiple respondents for a 45-minute online survey. The perspectives of professional managers may not be identical to those of officers or directors, but we do not believe that these substantially affected the results.

The respondents were a potential source of sample bias. CAI had 7,276 associations as members out of about 205,000 US community associations at the time of the survey. CAI members may be more sophisticated and interested in governance issues than the average community association manager, officer or director. It is also possible that the holders of the 4,500 e-mail addresses were, on average, higher-income, younger and more educated than CAI members who did not use computers. In addition, by virtue of their institutional positions, the respondents were likely to be biased in favor of strict enforcement (Mullainathan 2007).

If these departures from a representative distribution exist, the community associations of the respondents may be higher-valued and better-managed than the average. Conversely, people motivated to join the CAI may have been *more* likely to have troubled associations than average, but this appears less likely given the optimism bias (Jolls 2007) reflected in the responses. When respondents were asked to compare the change in average market value in their development to that of other developments in their area over the last 12 months, 59% said that value is growing faster than average and only 4% said slower than average. Over-optimism might raise the reported value of units in the association compared to the median house value, but by raising the reported values for all respondents, it is unlikely to have an effect on the relationship between enforcement and reported value.

Three hundred and ninety-six respondents visited the survey, which was posted on the commercial webhost hostedsurvey.com, and 234 (approximately 5% of the CAI e-mail) completed it. Judging from the e-mailed comments, the length reduced the response rate. In addition, survey respondents are typically reluctant to provide information that would identify their economic position (here, unit values and zip code) (Brace 2008). As in any survey questionnaire, there is a balance between comprehensiveness and respondent patience. We cleaned some data to discard or edit obviously incorrect records (e.g. a $10 per unit value for a studio apartment).

Surveys of community associations create inevitable sample bias problems. Researchers have no master list of associations, which can only be imperfectly identified through entity names in public records and inquiries of local brokers. There is not even a general agreement as to what constitutes a common interest community (Gibson & Lombard 2005). The names of association officers, unit owners and managers are generally not public records. It is therefore difficult to get a random sample of associations (Burby 1974; Cannaday 1994) and determine whether the respondents (often association presidents (Barton & Silverman 1987); board members (Lombard et al. 2004) or managers (Hseih 2009)) are representative. Several studies have obtained a good sample of a population which consists of one state (Barton & Silverman 1987 [California]; Lombard et al. 2004 [Virginia]), or one city (Cannaday 1994 [Chicago]; Schill et al. 2007 [New York]), but this creates sample bias if the results are to be applied nationally. It is even more difficult to get a random sample of association homeowners (Johnson 2013), although nationally-known Gallup Organization (CAI Research Foundation 1999, p.5) and Zogby Associates (Community Associations Institute 2009) polling organizations claim to have accomplished this in non-peer reviewed studies. A focus on price data, which is more objective and obtainable, may lead to more reliable results (Schill et al. 2007; Cannaday 1994). Given the importance of community associations in the US housing market, research adds information even with these limitations.

2.2 Survey Questions

The survey measured enforcement, violation and association characteristics over the preceding 12 months through 120 fine-grained questions (available at https://sites.google.com/site/jayweiser/Home/07-community-associations-survey) categorized as follows:

- enforcement intensity (feeling thermometers, number of violations),
- enforcement techniques used (negotiations, fines, self-help), and
- association characteristics (number and size of units, value, zip code).

3. Legal and Demographic Measures

3.1 Legal Environment

We controlled for the standard of review applied to association decisions by the courts of each state, assigning a dummy value of 1 to associations in states that apply deferential standards of review (the business judgment rule and Florida's rule that defer to decisions under covenants initially created with the development or later enacted by unit owners). We characterized other state standards (no rule, reasonable but not arbitrary and capricious, and reasonableness) as non-deferential, assigning a dummy value of 0, because the courts effectively performed case-by-case judgments of reasonableness.

3.2 Social Cohesion and Other Demographic Measures

The private-ordering literature asserts that groups can manage their affairs through private legal arrangements more effectively than through government regulation, and the communitarian literature asserts the benefits of social cohesion. We therefore used zip-code and state-level measures as proxies for social cohesion and the effectiveness of private ordering, such as education level, ideology, crime rates and incidence of nonprofit organizations. We dropped the few District of Columbia records from our positive violations per unit equation as an extreme outlier, with very high levels of both nonprofits and murders.

We also controlled for population age (hypothesizing that, with age, *Real Housewives*-style covenant noncompliance would become less likely) and population density (recognizing that denser areas, apart from a few gentrified central cities with a limited presence in our sample, tend to be lower-valued, but are potentially more communitarian).

The 2000 Census generally does not report by zip codes, in which the land area is difficult to precisely define, but by using a closely related measure called Zip Code Tabulation Area or the ZCTA (U.S. Census Bureau 2000h). When we refer to results as by zip code, they are technically by the ZCTA.

3.3 Descriptive Statistics

Descriptive statistics (as well as the effects of changes from the first to third quartile discussed in Sections 4.3 and 5.3 below) are given in Table 1.

We use, as a response variable in our first equation that measures the effect of enforcement practices on value, Log Zip Adjusted Value Per Room. Differences in development unit size mix affect value: where studio and one-bedroom units predominate, the lower square footage will generally be reflected in lower unit values. We therefore transformed the data to measure value per room by looking at broker listings in several markets to estimate weights for different unit sizes (for example, a one-bedroom, with two rooms, was ranked as having about 150% the expected value of a studio, with one room).

Values are also affected by regional housing price levels: Kansas City is cheaper than San Francisco. We therefore created a logged scale that compares the reported value per room to median value per room in the zip code of the association, which we constructed from U.S. Census data on median value per unit and median number of rooms. This allowed us to measure the percentage difference between the reported and median values per room. The residential real estate bubble was beginning in 2000 and underway by 2003, with regional differences in scale, although less extreme than they later became. As a robustness check, we stripped out responses from the bubble regions of California and Florida (about 20% of the records), which did not substantially change the results.

For ease of understanding, we transformed the logged zip adjusted value results in order to discuss them in terms of the percent difference between the value per room of an association with given characteristics and the value per room of the median housing in the zip code of the association. The median respondent estimates value per room in their development at 264% over the median value per room that we calculate for the zip code. Some of this reflects the price rise between 2000 and 2003. It may also reflect the market position of community association properties in a given zip code or optimism bias. Since we focus on reported differences in relative value change, the absolute percentage difference should not be regarded as a real-world number.

Table 1 Descriptive Statistics

Variable	Mean	St Dev	1st Q	Median	3rd Q	Response with each predictor set at 1st Q or Dummy=0	Response with each predictor set at 3d Q or Dummy=1	Change in Response
Equation 1: Zip adjusted value per room[1]								
Response								
Log zip adjusted value per room[2]	1.25	0.47	1.03	1.29	1.55			
Reported value per room as % over zip median	290%	193%	180%	264%	369%			
Predictors (all in nontransformed format)								
Enforcement factors								
Positive violations per 100 units (with Equation 1 records)	18.7	23.8	4.4	8.5	21.9	276%	235%	-41%
Lifestyle thermometer (1-10, 10=strict)	6.5	2.3	5.0	7.0	8.5	242%	279%	37%
Deferential standard of review dummy (1=yes)[3]	0.7	0.5	0.0	1.0	1.0	202%	258%	56%
Physical characteristics								
Development age	18.0	10.2	9.0	18.0	25.0	305%	225%	-80%
Multifamily dummy (1=yes)	0.8	0.4	1.0	1.0	1.0	353%	258%	-95%
Social cohesion								
Population density by zip code (unlogged)[4]	1447.0	2021.9	334.0	970.7	1709.6	278%	247%	-31%
Percent Bachelor's degree by zip code[5]	37.4	16.8	24.4	35.3	49.7	285%	214%	-71%
Property crime rate per 1000 by state[6]	33.5	7.1	25.9	34.5	39.8	294%	239%	-55%
N = 193								

(Continued…)

(Table 1 Continued)

Variable	Mean	St Dev	1st Q	Median	3rd Q	Response with each predictor set at 1st Q or Dummy=0	Response with each predictor set at 3d Q or Dummy=1	Change in Response
Equation 2: Positive violations per unit[1]								
Response								
(all variables in nontransformed format)								
Positive violations per 100 units (with Equation 2 records)	18.7	23.6	4.5	9.4	21.8			
Predictors								
Enforcement intensity								
Fines used dummy (1=used)	0.4	0.5	0.0	0.0	1.0			
Fines per 100 violations	21.0	33.2	0.0	0.0	29.2	10.7	6.0	-44%
Other remedies used dummy (1=used)	0.4	0.5	0.0	0.0	1.0			
Other remedies per 100 violations	14.2	32.0	0.0	0.0	13.0	13.5	7.7	-43%
Negotiations used dummy (1=used)	0.7	0.5	0.0	1.0	1.0			
Negotiations per 100 violations	29.3	34.9	0.0	13.8	50.0	5.9	5.2	-11%
Physical and demographic characteristics								
Total units in development	147.8	163.6	55.3	105.0	183.0	9.7	5.3	-46%
Median population age by zip code[7]	37.5	6.3	33.5	36.7	40.0	8.0	6.1	-24%
Social cohesion								
Murder rate per 100,000 by state[6]	5.2	2.1	3.1	5.9	6.4	9.0	6.8	-25%
Nonprofits per 1000 by state[8]	4.4	0.9	3.6	4.6	4.9	8.8	6.4	-27%
N =194								

(Continued…)

(Table 1 Continued)

Variable	Mean	St Dev	1st Q	Median	3rd Q	Response with each predictor set at 1st Q or Dummy=0	Response with each predictor set at 3d Q or Dummy=1	Change in Response
Variables not included in either equation (including only records used in both equations)								
Ideology by zip code[9]	10.4	11.1	5.3	11.8	17.3			
Adjusted religious adherence per 1000 by zip code[10]	573	153	442	570	702			
Average household size by zip code[11]	2.5	0.4	2.3	2.5	2.7			
Median household income by zip code[12]	57610	20748	43130	54640	69620			
Percent poverty by zip code[13]	7.9	6.9	3.7	5.7	9.8			
N = 188								

Sources: [1] Source for all variables unless otherwise noted: survey. All references to zip code are to the United States Census Bureau 2000h, *Census 2000 ZIP Code® tabulation areas (ZCTAs™)*. [2] U. S. Census Bureau 2000c, American FactFinder, *DP-4, Profile of Selected Housing Characteristics: 2000, 2000 SF3 Sample Data*. [3] Weiser 2003. [4] U. S. Census Bureau 2000d, American FactFinder, *GCT-PH1 population, housing units, area, and density: 2000 - 3-digit ZIP code tabulation area -- 5-digit ZIP code tabulation area*. [5] U. S. Census Bureau 2000a, American FactFinder, *DP-2, Profile of selected social characteristics: 2000*. [6] United States Data.gov Program Management Office 2006, *2006 Crime in the United States*. [7] U. S. Census Bureau 2000g, American FactFinder, *QT-P1 age groups and sex: 2000: Census 2000 summary file 1 (SF 1) 100-percent data*. [8] National Center for Charitable Statistics, Urban Institute 2002, *Number of registered organizations with IRS by state, NCCS all registered nonprofits table wizard, 2002*. [9] Ardoin & Garand 2001, *Garand Ardoin simulated Congressional district ideology scores*. Higher (lower) scores indicate more conservative (liberal) districts (Ardoin & Garand 2003, pp. 1173 n3, 1180-81). Adjusted for zip codes that cover multiple districts. [10] Association of Religious Data Archives 2000, *ARDA religion by county 2000, SPSS*. Adjusted religious adherence rate per 1000 calculated as per Finke & Scheitle 2005. [11] U. S. Census Bureau 2000e, American FactFinder, *H012 Average household size of occupied housing units by tenure: Census 2000 summary file 1 (SF 1) 100-Percent Data*. [12] U. S. Census Bureau 2000f, American FactFinder, *HCT012 Median household income in 1999 (dollars) by tenure, Census 2000 summary file 3 (SF 3) - Sample Data*. [13] U. S. Census Bureau 2000b, American FactFinder, *DP-3 Profile of selected economic characteristics: 2000, Census 2000 summary file 3 (SF 3) - sample data*.

Respondents tended to be in multifamily developments rather than standalone houses, and well-established communities (median development age 18 years). Thus, these were not the newest or glitziest communities, and likely to have some degree of cohesion and continuity. There were 6.9% of the respondents who reported no covenant violations at all. Including those associations who reported zero violations, there was a median 8.1 violations per 100 units, thus indicating a reasonably high level of compliance (we report per 100 units because this is easier than interpreting the decimals in a per-unit report; these figures are based on records used in our value regression).

4. Effect of Covenant Compliance on Value

4.1 Base Model

We regressed the change of the associations from Log Zip Adjusted Value Per Room against predictor variables which covered covenant enforcement intensity, and legal, physical and social cohesion characteristics. Our base model (see Table 2 below) is:

Log Zip Adjusted Value/Room =

Violations/Unit + Fines/Unit + Negotiations/Unit + Lifestyle Enforcement Thermometer + Deferential Standard Of Review + Development Age + Multifamily Dummy

Violations Per Unit were highly significant in the base model ($p < .01$), and not surprisingly negatively associated with Log Zip Adjusted Value Per Room: the more Violations Per Unit, the lower the relative value. Fines Per Unit and Negotiations Per Unit were not significant. Part of this is an identification problem, since 6.9% of the associations reported no violations, and inherently had no fines or negotiations related to violations (these figures are based on records used in our value regression). There was an additional multicollinearity issue, since a high number of violations would intuitively lead to a higher number of fines and negotiations.

We also constructed a measure of the perceived strictness of enforcement by the association, beyond the specific violation numbers. The survey asked four feeling thermometer questions on 1-10 scales to measure the enforcement of lifestyle and major use rules, flipping the scales on different questions so as to assure that the answers were thought through rather than mechanically ticked off. In preliminary runs, major use violations (e.g. core compliance with architectural requirements) were not significant in a variety of combinations. Presumably there are few major use violations during construction because developers (who create the covenants) have an interest in compliance; after the units are sold and the community association goes live, they are probably rare because they are easily detected. In contrast, given the complexity of association covenants, there are many opportunities to violate lifestyle rules, so not surprisingly, there were far more violations. The lifestyle rule responses

were not significant on the individual questions, but positive and weakly significant in the initial model when averaged into the Lifestyle Thermometer predictor variable ($p < .10$), thus indicating that perceived stricter enforcement is associated with higher zip adjusted value.

The base model also controlled for the legal environment, by using a dummy variable for the state judicial standard of review for association decisions. We hypothesized that associations would be less likely to face expensive litigation over enforcement decisions in deferential states, and found that a deferential standard of review is positively associated with Log Zip Adjusted Value Per Room (Deferential Std Rev Dummy $p < .01$).

We controlled for physical characteristics, and found that, as conventional wisdom would suggest, older developments are associated with lower Log Zip Adjusted Value Per Room (Development Age $p < .001$), as are multifamily developments (as opposed to stand-alone single-family developments; Multifamily Dummy $p < .01$).

The base model results are summarized in the left half of Table 2 below.

4.2 Final Model

We sought to eliminate identification and multicollinearity problems by dropping Fines Per Unit and Negotiations Per Unit as predictor variables. We also tested whether statewide and zip-wide measures of social cohesion affected the relative value provided by community associations. Thus, our final model (see right half of Table 2 above) is:

Log Zip Adjusted Value/Room =

Log Positive Violations/Unit + Lifestyle Enforcement Thermometer + Deferential Standard Of Review + Development Age + Multifamily Dummy + Log Population Density By Zip Code + Percent Bachelor's Degree By Zip Code + Property Crime Rate Per 1000 By State

The changes in the final model increase the adjusted r^2 from .229 to .360, but coefficients for significant base model predictor variables remain nearly identical in the final models. Significance levels remain stable or, in the case of Lifestyle Thermometer and Multifamily Dummy, increase. In order to make the reporting consistent with Equation 2 (see Part 5.1 below), we limited the dataset to respondents who reported violations, and reported the results as Log Positive Violations Per Unit, thus measuring only the level of violations per unit for those associations that reported at least one violation, but this did not substantially affect either the significance or the coefficient compared to using the original Violations Per Unit model, which also included associations that reported zero violations.

Table 2 Effect of Covenant Compliance on Value

Response variable: Log zip adjusted value per room	Base Model			Final Model		
Variables	Coefficient	Std Err	t-value	Coefficient	Std Err	t-value
Intercept	1.480	0.130	11.352	2.190	0.227	9.659
Enforcement factors						
Violations per unit	-0.341	0.127	-2.675			
Log positive violations per unit				-0.071	0.024	-2.910
Fines per unit	-0.008	0.061	-0.128			
Negotiations per unit	0.095	0.088	1.080			
Lifestyle thermometer (1-10,10=strict)	0.024	0.013	1.840	0.030	0.012	2.381
Deferential standard review of dummy (1=deferential)	0.173	0.063	2.751	0.169	0.063	2.681
Physical characteristics						
Development age	-0.016	0.003	-5.488	-0.014	0.003	-4.965
Multifamily dummy (1=yes)	-0.235	0.072	-3.262	-0.236	0.069	-3.444
Log population density by zip code				-0.051	0.022	-2.309
Social cohesion						
Percent bachelors degree by zip code				-0.008	0.002	-4.729
Property crime rate per 1000 by state				-10.176	4.221	-2.411
Multiple r^2	.256			.386		
Adjusted r^2	.229			.360		
DF	194			184		

Among the social cohesion variables, to our surprise, the Percent Bachelors Degree Holders By Zip Code is negatively associated with zip adjusted value ($p < .0001$), which suggests that in areas populated by people who are self-controlled enough to complete their degree, the discipline and enforcement provided by community associations are superfluous – or that in zip codes with high numbers of bachelor degrees, community association properties are at the lower end (education levels are positively associated with income). Less surprisingly, the Property Crime Rate Per 1000 By State is also negatively associated with zip adjusted value ($p <.05$), which suggests that associations add less value in an environment with poor protection of property rights.

We looked at several other potential measures of social cohesion, including nonprofits per thousand by state, political ideology (might conservative respect for authority or liberal collectivism have an impact?) and religious adherence (might believers be more supportive of community association cohesion, whether out of love for their fellow unit owners or fear of punishment by an angry God?), but none are significant.

4.3 Relative Strength of Effects of Significant Predictor Variables in Final Model

To gauge the relative effect on the value of the predictor variables in our final model, we calculated the fitted response value with all predictors set to their median. We then predicted the fitted response variable when each continuous predictor variable was set at the value of its first quartile (1Q) and third quartile (3Q) responses (for dummy predictor variables, we calculated the fitted response when the dummy variable was set at 0 and 1), holding all other predictor variables at their median. The results are shown in the top half of Table 1 above, thus addressing Equation 1, Zip Adjusted Value Per Room. With all predictor values held at their median, the fitted response value is 258% over zip median value per room. (This is slightly different from the median value of 264% by using all values in the descriptive statistics. As with the descriptive statistics, this should be taken as a broad gauge rather than a hard number, since our main concern is the relative impact of the variables on value.)

Enforcement factors have a substantial effect on relative value. As Deferential State Standard of Review Dummy (1=Yes) moves from 0 to 1, holding all other predictors at their median, the response increases by 56% (moving from 202% to 258% over zip median value per room). As Lifestyle Thermometer (1-10, 10=Strict) moves from the first quartile (5.0) to the third quartile (8.5), the response increases by 37%. As Positive Violations Per 100 Units moves from 4.4 to 21.8, holding all other predictors at their median, the response decreases by 41%.

Not surprisingly, real estate-related characteristics have a larger effect than enforcement factors: the response decreases by more than 80% as Development Age moves from 9 to 25 years, and as the development moves from higher-end single-family (Multifamily Dummy = 0) to more mass-market multifamily (Multifamily Dummy = 1).

Demographic indicators of social cohesion also have a substantial effect. As Property Crime Rate Per 1000 By State moves from 26 to 40, the response decreases by 55% (from 294% to 239% over zip median value per room; i.e. in jurisdictions with relatively high property crime, the common interest community is associated with relatively less value). In contrast, for Percent Bachelors' Degree By Zip Code, moving from the first quartile (24.4%) to the third quartile (39.9%) decreases the response by 55%, which suggests that community associations are adding less value where the population is likely to be more professionally stable, better organized and prosperous.

5. Effect of Enforcement Practices on Violations

5.1 Base Model

As identification and multicollinearity problems made it impossible to directly test the effect of fines and negotiations on value, we created a second equation in which we examined the effects of enforcement practices, with various controls, on the level of violations per unit, measured as a response variable of Log Positive Violations Per Unit. The use of positive violations eliminates the identification problem posed by the fact that associations with zero violations will also use zero methods of enforcement. We chose violations per unit, rather than total violations, because associations vary widely in size. Among our respondents, the smallest association has about 10 units; the largest has 1300, and would therefore be expected to have more violations. We logged the variable because it appeared that changes in enforcement practices are associated with a percentage change, rather than an absolute change, in violations.

While Log Positive Violations Per Unit is the response variable in the second equation and a predictor variable in the first (zip adjusted value) equation, this is not a true two-stage least squares or structural equation model. First, perhaps due to the small sample size, plugging the predictor variables of the log positive violations equation, weighted by their coefficients, into the zip adjusted value equation does not produce significant results. Second, Log Positive Violations Per Unit may not be fully independent of the other predictor variables in the zip adjusted value equation. Thus, the results are suggestive as to the effect of specific enforcement practices on zip adjusted value.

To construct the predictor variables, we looked for measures of private-ordered enforcement practices, asking questions about fines, self-help, voting rights and amenities cutoffs, and forced sales. To measure the use of remedies, we first constructed a predictor variable that measures the availability of each private-ordered remedy under the CCRs of the association, but this did not produce significant results: substantially, all the associations have fines and self-help available and most have a voting rights cutoff available; the other private-ordered remedies are of less practical importance. We did not create a predictor variable for private-ordered remedies per unit, since this would result in an identification problem parallel to that for violations per unit: only associations with low (high) violations per unit could have low (high) use of private-ordered remedies per unit.

Therefore, in our base model, we measured private-ordered remedies per violation, since the proportion would reflect the intensity of enforcement. We split private-ordered remedies into two independent variables: the frequently-used fines and the less-commonly-used other private-ordered remedies. Due to their infrequent use, we combined other private-ordered remedies (self-help, forced sale, and voting rights and amenities cutoff). To ensure the internal consistency of the data, we allowed no more than one fine per violation, and no more than four other remedies per violation.

The survey also asked about other techniques for resolving violations, including negotiations, mediation and arbitration. The incidence of the latter two was too small to use in our regressions, but many associations frequently negotiated with violators, so we created Positive Negotiations Per Violation as a predictor variable.

In constructing the equation, we attempted to control for several association physical characteristics (age of development, whether the development is multifamily versus townhouse versus free-standing, number of units, percent studios and one-bedrooms, association legal structure (condo versus co-op versus Planned Unit Development (PUD)) and developer control. Of these, only the number of units is significant (see discussion below), and the others were dropped out of the model. We logged the number of units, since the effect of association size is not linear: there is a much greater difference between a 10-unit and a 500-unit association than there is between a 500-unit and 1000-unit association.

As in our model for Log Zip Adjusted Value Per Room, we looked at a number of demographic and ideological variables to measure whether social cohesion might have an effect on violations per unit. Since we did not have this information for the individual associations, we measured the geographic areas in which they are located.

Thus, our base regression equation (see Table 3 below) is:

Log Positive Violations/Unit =

Positive Fines/Violation + Positive Other Remedies/Violation + Positive Negotiations/Violation + Log Total Units + Log Median Population Age By Zip Code + Log Murder Rate by State + Nonprofits per 1000 By State

In our base model, there is strong significance for Positive Other Remedies Per Violation ($p < 0.01$) and Positive Negotiations Per Violation ($p < 0.001$), but to our surprise, Positive Fines Per Violation is not significant despite more frequent use per violation than all of the other remedies combined. Log Total Units is strongly significant ($p < 0.001$), thus suggesting that larger common interest communities are better able to enforce their rules, and that the intimacy and possible social cohesion of a smaller common interest community are less effective in reducing violations than the more systematic enforcement (and likely presence of professional managers) in larger associations. This is consistent with the finding of Lombard et al. (2004, pp. E-1, E-2) that liens against members and association size are significantly and positively associated with communities that employ professional management.

Among the demographic controls, higher Median Population Age By Zip Code and Nonprofits per 1000 By State are both strongly associated with a lower level of Log Positive Violations Per Unit ($p < 0.001$). The former suggests that more mature unit owners tend to be more compliant and less likely to want to antagonize neighbors, consistent with the finding by Allen (1997) that adults-only age restrictions are value-adding. The latter suggests that a more communitarian regional attitude (reflected in the number of nonprofits) is also associated with a lower level of violations.

Although an increase in Property Crime Rate Per 1000 By State is significantly associated with a lower Log Zip Adjusted Value Per Room in our first equation, it is not significant in the equation for Log Positive Violations Per Unit. A parallel crime predictor variable, Log Murder Rate By State is less strongly significant ($p < 0.05$) and moves in the opposite direction: more murders mean fewer violations, thus suggesting a complicated effect. Arguably, high state property crime levels are associated with reduced value-added by community associations because the property crime level reflects the general level of disorder in the neighborhood, and people outside the common interest community will be tempted to commit crimes within it. However, the association of high state murder rates with lower violations per unit suggests that, in regions with lower social cohesion, common interest communities give more stable types the opportunity to cohere and create social capital.

These results are summarized in the left half of Table 3 below.

Table 3 Effect of Enforcement Practices on Violations

Response Variable: Log positive violations per unit	Base Model: Enforcement Intensity No Dummies			Final Model: Enforcement Intensity With Dummies		
	Coefficient	**Std Err**	**t-value**	**Coefficient**	**Std Err**	**t-value**
Intercept	3.014	2.492	1.210	2.472	2.201	1.123
Enforcement intensity						
Fines used dummy (1=used)				0.546	0.194	2.810
Positive fines per violation	-0.179	0.228	-0.787	-0.843	0.283	-2.974
Other remedies used dummy (1=used)				0.756	0.165	4.572
Positive other remedies per violation	-0.763	0.236	-3.237	-1.319	0.244	-5.400
Negotiations used dummy (1=used)				0.641	0.183	3.506
Positive negotiations per violation	-0.819	0.216	-3.791	-1.240	0.261	-4.758
Physical and demographic characteristics						
Log median pop age by zip code	-1.849	0.474	-3.897	-1.506	0.425	-3.540
Log total units	-0.318	0.086	-3.688	-0.500	0.081	-6.205
Social cohesion						
Log murder rate by state	-0.459	0.203	-2.258	-0.380	0.179	-2.118
Nonprofits per 1000 by state	-.0313	0.106	-2.946	-0.242	0.094	-2.566
Multiple r^2	.276			.449		
Adjusted r^2	.249			.418		
DF	186			183		

5.2 Final Model Incorporating Dummy Measure of Enforcement

To address the identification problem of the base model – whether associations that report zero enforcement actions were responding to zero violations, or instead failing to enforce their rules where there were positive violations – we created dummy variables for whether the associations ever used fines, other remedies or negotiations (for each, ever used =1). Then, for those associations that ever used these enforcement tools, we created interaction variables to measure the intensity of enforcement in the form of Positive Fines Per Unit, Positive Other Remedies Per Unit, and Positive Negotiations Per Unit.

Thus, our final regression equation is (see right half of Table 3 above):

Log Positive Violations/Unit =

Fines Dummy + Positive Fines/Violation + Other Remedies Dummy + Positive Other Remedies /Violation + Negotiations Dummy + Positive Negotiations/Violation + Log Total Units + Log Median Population Age By Zip Code + Log Murder Rate by State + Nonprofits Per 1000 By State

The final model resolves the identification problem, since the dummy variables showed a significant positive association between Log Positive Violations Per Unit and the use of fines ($p < .01$), other remedies and negotiations (both $p < .001$). In other words, associations that used these enforcement tools have higher levels of Log Positive Violations Per Unit, which suggest that associations that did not use these enforcement tools eschewed them because they have low levels of violations.

The results also showed that, where there were violations, enforcement intensity is associated with significantly reduced violations per unit. Positive Fines Per Violation are now negatively and strongly significantly associated with Log Positive Violations Per Unit ($p < .01$), as are Positive Other Remedies Per Violation and Positive Negotiations Per Violation (both $p < .001$). Log Total Units and the demographic variables (Population Age By Zip Code, Log Murder Rate by State and Nonprofits per 1000 By State) also remain significant (the latter two social cohesion variables now at a less strongly significant level, $p < .05$), although their coefficients remain similar. The final model has an adjusted $r^2 = .449$, in contrast to the adjusted $r^2 = .276$ of the base model.

As a robustness check, we ran an intermediate model with the dummy and enforcement technique per violation variables, but without Log Total Units and the demographic and social cohesion variables. The variables are all significant (albeit at somewhat weaker levels) and the coefficients are substantially similar, with an adjusted $r^2 = .281$ that is similar to the base model. This suggests that the final model addresses the identification problem.

5.3 Relative Strength of Effects of Significant Predictor Variables in Final Model

For our final model of Log Positive Violations Per Unit, as with our model for Log Zip Adjusted Value Per Room, we gauged the relative effect of the predictor variables by calculating the fitted response value with all predictors unlogged and set to their median. We then predicted the fitted response variable when each continuous predictor variable was unlogged and set at the value of its first quartile (1Q) and third quartile (3Q) responses (we set dummy predictor variables at 0 and 1), holding all other predictor variables at their median (see bottom half of Table 1 above, which addresses Equation 2, Positive Violations Per Unit.)

By holding all predictor values at their median, the predicted response is 7.0 violations per 100 units (we express the predicted values per 100 units, rather than per unit, in order to avoid mental conversions of small decimals, but this does not affect the results). This compares with a median of 9.4 violations per 100 units by using all values in the descriptive statistics set forth in Table 1 above (as with the descriptive statistics, this should be taken as a broad gauge).

Intensity of remedy use has a substantial effect on the level of violations. As Fines Per 100 Violations moves from 0 to 29, holding all other predictors at their median, Positive Violations Per 100 Units decreases by 44% (from 10.7 to 6.0). Similarly, Positive Violations Per 100 Units decreases by 43% as Other Remedies Per 100 Violations moves from 0 to 13. Negotiation intensity has a smaller effect: as Negotiations Per 100 Violations moves from 0 to 50, holding all other predictors at their median, Positive Violations Per 100 Units decreases by only 11% (from 5.9 to 5.2).

Demographic and social cohesion indicators also have a substantial effect. As Total Units In Development moves from 55 to 183, holding all other predictors at their median, Positive Violations Per 100 Units decreases by 46% (from 9.7 to 5.3), thus suggesting that the more intimate atmosphere of smaller associations is less conducive to enforcement than the more standardized procedures (and, presumably, larger on-site staff) of larger associations. As Median Population Age By Zip Code moves from 34 to 40, Positive Violations Per 100 Units decreases by 24%.

Regions with social cohesion are associated with fewer violations: as Nonprofits Per 1000 By State moves from 3.6 to 4.9, holding all other predictors at their median, Positive Violations Per 100 Units decreases by 27% (from 8.8 to 6.4). While in Equation 1, a higher state property crime rate is associated with a lower relative value, in Equation 2, as Murder Rate By State Per 100,000 moves from 3.1 to 6.4, Positive Violations Per 100 Units decreases by 25%.

6. Conclusion

We employ a regression analysis, based on a survey of community association officers directors and managers, to show that covenant enforcement intensity is positively associated with higher relative unit value (by using a differences-in-differences approach) and lower violation levels. We also show that states with more deferential standards of review of community association actions are associated with higher relative unit value. A larger sample might make it possible to determine whether specific enforcement practices, different types of remedies (e.g. fines versus self-help) and the impact of different sanction levels, are associated with unit value and violation levels.

We produce more ambiguous results on the association of social cohesion on unit value and violations – a field of research that, to our knowledge, has not been previously explored in the social cohesion literature. Some measures of social cohesion have significant effects consistent with those in the literature (property crime is associated with lower unit value, while population age and level of nonprofits are associated with lower violation levels). Others are counterintuitive, or perhaps reflect endogeneity issues. The limitations of our data require us to employ social cohesion measures based on larger geographic areas than our community associations inhabit, such as state and zip code. Surveys could be of a substantial proportion if unit owners within associations would provide more granular results, and would add to the existing literature on non-self-governing neighborhoods and housing projects.

In contrast to the existing literature on community associations, we find that larger associations are associated with lower violation levels. Further research should attempt to distinguish whether this is a consequence of professional management, or of greater resources for enforcement.

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