



## HOMEOWNERS ASSOCIATIONS AND THE DEMAND FOR LOCAL LAND USE REGULATION\*

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**ABSTRACT.** Residents pay into Homeowners Associations (HOAs) to exert greater control over service provision, their properties and those of their neighbors. HOAs enforce restrictions governing land use within their boundaries, but theory is ambiguous about their impact on public land use. By combining two novel data sets on Florida HOAs and municipal regulations, we examine how HOAs affect public land use regimes for 232 cities. We find that the prevalence of HOAs is positively associated with a propensity for regulation, as are newer and bigger HOAs. Also, HOAs are positively associated with land use techniques that direct development through incentives, rather than mandates.

### 1. INTRODUCTION

Ever since New York's first zoning ordinance in 1916, local municipalities have used their authority to govern the use of land and structures within their boundaries. Although not public in nature, and much more limited in their authority and capacity, private homeowners associations (HOAs) have used their covenants to conduct similar land use management activities. These "private governments" provide residents with a housing option where they pay for exclusive services, including land use regulation, that are above-and-beyond those provided by the local public sector. Membership in these associations has grown tremendously over the past few decades,<sup>1</sup> suggesting that residents are willing, and able, to pay for additional services, amenities and, in general, more control over the use of their properties and those of their neighbors. In times of increasingly tight budgets, localities find these associations appealing, because they can reduce the burden of publicly provided goods and services. Proponents of private service providers (like HOAs) tout them as a more efficient and cost-effective means of providing certain services. Skeptics, however, are concerned about how the presence of private alternatives might affect the nature and level of the publicly provided goods: nonmembers might be at a disadvantage by being excluded from the privately provided good and by receiving altered (perhaps

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<sup>1</sup>The Community Associations Institute (CAI), a trade group representing HOAs and their boards, estimates that in the U.S., there were 24.8 million housing units in HOAs in 2010, compared to 701,000 units in 1970. (<http://www.caionline.org/info/research/Pages/default.aspx>).

fewer) public services. Here we focus on the implications for local land use regulation. Does the presence of HOAs influence the stringency and nature of the larger, public land use regime? Do HOAs demand more stringent land use regulations both inside and outside their borders?

A modest, but longstanding, body of work has looked at whether and how HOAs (and other similar institutions, such as common interest developments or condominiums) might affect the policies and practices of local general-purpose governments (see Gordon, 2004; Cheung, 2008; Meltzer, 2011). The topic has received little empirical analysis, and no study to date has addressed the question posed earlier. We present a theoretical framework that suggests that HOA members may prefer more or less stringent public land use regulation; thus the nature and extent of their influence on the broader land use regime is an empirical matter. Using a combination of two unique data sets that, together, provide us with information on the size, location, and creation date of HOAs and on the stringency and design of local land use regimes for 232 jurisdictions in Florida, we test for the effect of HOA presence on the public sector's land use management practices.

Our OLS and two-stage least squares results show that a higher number of HOAs is associated with more local land use management practices in a jurisdiction; in particular, it is associated with more regulations that increase the flexibility of residential development. In addition, places with relatively newer and bigger HOAs are associated with more regulation. Together these findings suggest that HOAs tend to demand more land use regulation on the part of the public sector (or that they more often locate in more regulated environments). The HOAs, however, coexist with more incentivizing regulations, which suggests a tendency towards development friendly coordination rather than antidevelopment resistance.

This paper proceeds in the following way. Section 2 defines private governments and describes HOAs broadly. Section 3 reviews the relevant empirical literature and Section 4 sets up a theoretical framework for analyzing the HOAs' demand for land use regulation. Sections 5 and 6 describe the data, methodology, and regression results. Finally, Section 7 concludes.

## 2. PRIVATE GOVERNMENTS AND HOMEOWNERS ASSOCIATIONS

HOAs, and Residential Community Associations (RCAs) more broadly, are considered a type of "private government" (Helsley and Strange, 1998). Helsley and Strange (1998) were the first to formally define private governments and in their model they form due to property owner dissatisfaction with public government services. This dissatisfaction is caused by (1) heterogeneity in demand for public services, (2) cost differences between public and private sector service provision, and (3) conflict between public sector incentives and objectives of the citizenry. In addition, they assume that public and private government services are perfectly substitutable. They predict that the private government will form if the benefit of supplemental services from the private government less the cost of membership exceeds zero. More generally, HOAs, and other private governments, are a mechanism for addressing heterogeneity in demand for services at a very localized level. Members will pay into the private governments if they value, and are willing to pay for, services above and beyond those provided by the local public sector.

Although scholarly attention is relatively new, HOAs are by no means a recent phenomenon. Indeed, the first recorded association was founded in Boston, Massachusetts in 1844 (Reichman, 1976). However, during the past few decades they have proliferated across the country as one of the fastest growing housing options and privatization efforts (McCabe and Tao, 2006). In 1962 there were roughly 500 RCAs nationally, and that number rose to more than 280,000 by 2007 (Gordon, 2004; CAI, 2008). CAI (2000) also

estimates that, as of 2000, nearly 60 percent of all new construction was included as part of an RCA. By 2007 the number of units in some kind of RCA constituted nearly 20 percent of the national housing stock.<sup>2</sup>

HOAs are one type of RCA (a term that includes both cooperative and condominium associations as well), and are often considered synonymous with planned unit developments (PUDs) and gated communities.<sup>3</sup> The developer typically establishes the association upon erecting the community and then allocates the shares of the association as he or she sells the units in the development. HOAs are ultimately incorporated as nonprofits and homeowners in the community share ownership of the common areas and facilities.<sup>4</sup> The association also establishes and enforces covenants and restrictions governing land use (Cheung, 2008; Cheung, 2010). The content of these covenants can cover property usage, such as the possession of pets, lawn decorations and leasing rules, as well as building characteristics, such as setbacks, eaves and fencing. The covenants also stipulate voting structures for the associations, and assign power depending on the size or value of the home. Each member pays an assessment (or fee) to maintain the amenities and to provide other supplemental services to the community. Services range from basic maintenance to infrastructure development, and the size of a community can be as small as two units and as large as 20,000 units (CAI, 2008). In Florida, HOAs typically encompass single-family homes, whereas condominium and cooperative developments tend to apply to multifamily structures.<sup>5</sup>

Although HOAs have grown in popularity, they are not free of controversy. Like those that support other forms of private government, proponents of HOAs claim that they aid cash-strapped cities in providing more locally targeted services to households who value such supplements and are willing to pay for them. Some have also suggested that HOAs may reduce the cost of housing since many municipalities allow developers to build HOA projects and in turn bypass certain regulations that usually increase the cost of development (ACIR, 1989). Local governments increasingly encourage the development of HOAs in that they require the formation of the association at the time of new construction (McKenzie, 2003).<sup>6</sup> The services provided by PUDs and gated communities can lessen the burden for public sector service provision, and local officials often favor this approach.

Opponents, however, worry that HOAs are simply a private mechanism for residential exclusion and segregation, and that members are not only paying for extra services, but for protection and isolation from neighbors of racially or economically different backgrounds (McKenzie, 1994; Blakely and Snyder, 1997; Low, 2003). Some have suggested that HOAs are even more exclusionary than traditional suburbs (Gordon, 2004). Now residents have a mechanism to not only sort across jurisdictions, but within them as well. The fact that HOAs often provide exclusive services and amenities to their members also means that within-jurisdiction sorting could lead to significant service disparities. Those less skeptical absolve local government of any responsibility over HOAs, since they are believed to be “market-driven” mechanisms that merely respond to local demand for

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<sup>2</sup> This statistic is based on industry data from the Community Association Institute (available at <http://www.caionline.org/info/research/Pages/default.aspx>), data from the American Community Survey and authors' calculations.

<sup>3</sup> Not all HOAs are situated in PUDs or gated communities; however, it is typically the case that PUDs and gated communities are governed by HOAs.

<sup>4</sup> Incorporation as nonprofit is required in Florida; while other states do not always require it in the legislation, most HOAs incorporate as nonprofits in practice.

<sup>5</sup> This distinction is based on conversations with professionals working with HOAs in Florida.

<sup>6</sup> Or, alternatively, the municipality will make development easier should the developer establish an HOA with the project (ACIR, 1989).

housing location and amenities (McKenzie, 2003; Strahilevitz, 2006). Indeed, the Florida legislation governing HOAs explicitly exempts these associations from layers of oversight that are believed to interfere with the efficiency of the private government operations.

### 3. REVIEW OF THE EMPIRICAL LITERATURE

The empirical literature on the interaction between HOAs and local land use regimes is thin to nonexistent. No study to date explicitly tests for the effect of HOAs on public land use management practices. The most relevant studies focus on the relationship between RCAs, and more specifically covenant restrictions, and house prices. These studies begin to explain what types of restrictions are valued by homebuyers. Local governments have great fiscal incentives to foster a regulatory environment that maximizes home values (and, in turn, tax revenues), a goal that might be achieved through some public–private interaction in the regulation of land use. Rogers (2006) compiles a unique dataset with over 1,400 single-family sales and information on various RCAs' use restrictions, building restrictions, and voting rules from Greeley, Colorado. He runs cross-sectional hedonic regressions, controlling for spatial autocorrelation, to estimate the impact of RCA regulations on house prices, and he produces mixed results. On average, RCAs generally and their use restrictions specifically are associated with higher house prices; building restrictions (covering architecture or easements), on the other hand have no significant effect on house prices. In addition, voting rules of 80 percent generate the most value and mortgage-holder voting rights dampen values. His results suggest that RCAs do provide some regulatory value that is perhaps underprovided by the local government; that is, residents are willing to pay more for control over current and future neighborhood restrictions.

Similar to Rogers, Hughes and Turnbull (1996) run hedonic regressions to estimate the effect of restrictive deeds and covenants on house prices. They use a sample of 1,314 single-family detached house sales from 37 neighborhoods with covenant and deed restrictions in Baton Rouge, Louisiana, and they control for observable house and neighborhood characteristics over a seven-year period. Their theoretical framework focuses on neighborhood externality effects and how decreased housing consumption risk (presumably achieved through more restrictive deeds and covenants) can reduce these effects. They find that stricter land use control overall increases house prices, suggesting that the reduced uncertainty from these restrictions is capitalized into the house prices. When they interact this measure of strictness with the age of the neighborhood, they find that more restrictive initial deeds have a diminishing effect on prices as the neighborhood matures. They explain this finding by the fact that over time (after the initial deed is in place) any new covenant adoptions would only take place if the marginal risk reduction benefit equals the marginal creation, monitoring, and enforcement costs.

Speyrer (1989) uses a similar estimation approach, but compares the effect of zoning to that of covenants on house prices in Houston. Consistent with the previous studies, she finds a positive effect, and specifically a \$4,800 to \$5,900 premium (evaluated at the mean). She does not, however, find any difference in the premium between zoning and covenants, concluding that the two are either indistinguishable to the marginal buyer or indeterminate in the current estimation due to the shape of the marginal buyer's utility function.

Cannaday (1994) focuses on one particular type of restriction: pet covenants. He uses data on 1,061 condominium sales from 13 high-rise complexes located north of downtown Chicago and exploits variation in the type and size of pet allowed in the condo rules and regulations. He finds that homebuyers will pay more to be in a condo that allows pets over "no pets" and one that allows cats over dogs. He interprets this finding to show that while

“no pets” is too restrictive a covenant, cats are viewed as less of a nuisance than dogs, and therefore closer to the optimal covenant restrictiveness (which is not necessarily the most restrictive scenario). In sum, the evidence suggests that the regulatory nature of HOAs is associated with increased house values, but their effect on the larger municipal regime is still unknown.

#### 4. THEORETICAL FRAMEWORK

##### *HOAs and the Demand for Local Land use Regulation*

Members of HOAs, and private governments more generally, opt into these communities due to their dissatisfaction with the level of public good provision (Helsley and Strange, 1998). We can extend this notion of public goods to include zoning, which is typically under the authority of the general-purpose government as a means of mitigating both fiscal and physical negative externalities. As described in Section 2, HOAs do not possess the comprehensive authority of a general-purpose government, but they do participate in zoning-like activities that restrict the use and physical appearance of their member properties. In addition, their covenants stipulate voting schemas that delegate power differentially across members of the HOA depending on the size or value of their homes; this voting structure is then the deciding factor in the current and future restrictiveness of the governing use and building regulations. Together, these covenants and restrictions can influence the degree of risk associated with buying into the neighborhood. Members of HOAs are able and willing to pay for this added insurance, a benefit that should be capitalized into the values of their properties.

The interaction between HOA-provided and local government-provided regulation can be formalized in a simple theoretical framework. Assuming that a homeowner's benefit from land use regulation enters into the utility function in form  $v(g^{\text{pub}}, g^{\text{priv}})$ , where  $g^{\text{pub}}$  represents the level of regulation provided by the local government and  $g^{\text{priv}}$  the level provided by the HOA, if the homeowner is a member of the HOA and 0 otherwise. The objective of both the local government and the HOA is to choose a level of regulation to maximize the combined utility of their population, taking the other government's level of regulation as given. It can be shown that the sign of the cross-partial  $v_{12}$ , in equilibrium, determines the local government's response to increased HOA regulation: a positive (negative) cross-partial indicates strategic complementarity (substitutability) by the local government.<sup>7</sup> This ambiguity provides the motivation for the main question in our empirical analysis.

It is possible to advance examples for both the substitutability and complementarity arguments. Fischel (2003, 2004) argues that local governments view HOA regulation as complements to local land use restrictions, asserting that “homeowners appear to want both more zoning and more private regulation.” He gives anecdotal evidence from Seattle, Southern California and Ohio where cities that were primarily composed of homes in HOAs did not surrender their public land use authority. Indeed, in some cases, developers of HOAs were the primary lobbyists in favor of public zoning, in order to protect the character of the (publicly regulated) land surrounding the HOAs. A key justification for this argument is that higher-density communities, such as those commonly found in planned developments, require more regulation. Indeed, if residents sort into HOAs as a response to some “underprovision” of land use regulation in the municipality, then they or the HOA's developer could use their organized position to lobby the local government for

<sup>7</sup> The model outlined here is similar to the model described in Cheung (2008), and for brevity is not worked out here. It is available from the authors upon request.

increased land use regulation. The collective efforts of the HOA could influence change on the part of the public sector more so than dispersed homeowners (especially if the HOA is providing other services that help to reduce the burden of provision on the public sector). Finally, Fischel notes that HOAs can also help to reduce transaction costs in dealing with complex zoning issues.

Increased demand for public land use regulation is also in line with the goal to preserve or enhance property values; if measures are taken to reduce uncertainty in development across the entire municipality, the property values both inside and external to the HOA(s) will benefit from this adjustment. Kennedy (1995) and Fischel (2003, 2004) argue that homeowners are not only concerned with the land use within the HOA's boundaries, but outside of it; therefore they would support more stringent zoning throughout the jurisdiction.

The opposing perspective argues that local government will substitute away from providing goods and services that are also provided by the private HOA (see Helsley and Strange, 1998; Nelson, 2004; Cheung, 2008). Any dissatisfaction with the local land use regime may actually influence HOA members to remain disengaged with the public sector and rely on their internal land use controls, over which they have more direct say.<sup>8</sup> Local government may also realize that the HOA can more effectively regulate certain development behaviors, such as structural and façade requirements. This response would result in some form of reduced regulation on the part of the public sector (or at most no response on the part of the public sector if existing regulations are simply maintained rather than actually reduced). The reduction in public spending in the face of HOA proliferation has been empirically verified by Cheung (2008) for parks and recreation, trash collection and police spending in municipalities in California, but public sector response has not been tested in the context of land use regulation.

Florida provides a useful laboratory to test for the presence and sign of the interaction between public land use management and private HOAs. First, there is a great deal of variety in how land use is regulated across municipalities. The Local Government Comprehensive Planning Act of 1975 required every locality to adopt a comprehensive plan, which created a diverse set of regulatory tools across the state (DeGrove, 2005). The instrumental Growth Management Act significantly amended this in 1985, following concerns that the state had limited powers to enforce compliance. The Act provided jurisdictions and citizens with a mandate to guide future development, preserve public order and protect human and environmental resources (Carriker, 2006). This meant that the necessary local comprehensive plan and maps must address the municipality's goals dealing with infrastructure, open space, housing, and so on. In addition, any land use regulations implemented must be consistent with the local plan; this requirement of consistency between the plans and the regulations is not found in many other states with a planning rule.<sup>9</sup> Thus, the set of options available coupled with a consistency requirement provides a more or less standard way to compare the regulatory climates of different jurisdictions across the state.

In addition, the legal framework may enhance the interaction between public land use and private HOAs. As Boarnet, McLaughlin, and Carruthers (2011) mention, a core goal of the Growth Management Act is to increase density, and provisions in the Act allowed for incentives for cities to adopt low-sprawl, high-density development. For instance, one incentive is the ability for local governments to set up PUD ordinances, through which

<sup>8</sup> This scenario is consistent with the Reich's "secession of the successful" (1991).

<sup>9</sup> DeGrove and Metzger (1993) and Chapin, Connerly and Higgins (2007) provide additional information on the history of growth management in Florida. We thank an anonymous referee for pointing this out.

developers obtain flexibility in zoning regulations by submitting a plan for land use and the common spaces for a parcel of land. To maintain these developments after the units have been sold, the ordinances usually allow developers to set up HOAs. In these communities, the private association, in essence, takes over the role of the public planner in the development process (McKenzie, 2005). Thus, the rise in popularity of the HOAs may contribute to the number and types of regulations in place in a locality.

#### *What Drives the Extent and Nature of the Public Sector's Response?*

The extent and nature of the public sector's response will not only depend on whether an HOA resides within the boundaries of the local jurisdiction. It will also depend on the extent of HOA presence. If there are more HOAs or larger HOAs (or both) within the jurisdiction, then we would expect the response to be more intense. Likewise, since zoning regimes are notoriously "sticky," we might expect places with older or more established HOAs to exhibit more intense responses. In these cases, the public sector will have had more time to adjust to the demands of the HOA community (if they exist) and complete the public process that goes along with adjusting local land use ordinances.

## 5. DATA AND METHODOLOGY

### *Data*

The data for this paper are collected from a number of sources. The unit of analysis throughout will be called the "jurisdiction," which is an incorporated municipality.<sup>10</sup> This is the unit of government responsible for land use decisions within cities.<sup>11</sup> Information on Florida HOAs is obtained from Sunshine List, a private, Florida-based corporation that has compiled the most comprehensive and up-to-date list of HOAs in the state. This data set includes information on the location and creation date of every active HOA in Florida as of 2008.<sup>12</sup> Our first measure of HOA presence is simply a count of how many HOAs there are in each jurisdiction. We call this variable HOASUM.

Next, there is reason to suspect that HOAs with relatively more housing units are likely to exert more of an influence on local land use regimes. However, the data set does not indicate how many residential parcels are in each HOA, and so there is no way to identify the size of the HOA. To explore this question we supplement this data set with information on parcels and subdivisions for each county obtained from each individual county property assessor's office. Specifically, in order to determine the number of parcels per HOA, we assign each HOA address to a subdivision using GIS mapping techniques and then assign the number of parcels in that matched subdivision to the HOA. We make the reasonable assumption that all parcels within the same subdivision lie in the same HOA. We then sum up the parcels within each HOA to the jurisdiction level and then divide by the jurisdiction's 2005 population to obtain PARCELPERCAP, the total number

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<sup>10</sup> In Florida, a municipality may be officially termed a city, town, or village, but they are functionally identical.

<sup>11</sup> For homeowners who live in unincorporated areas, the county makes land use planning decisions. We do not have complete data for some of our variables for counties, and we exclude unincorporated jurisdictions from our analysis. In addition, it is conceivable that unincorporated areas are systematically different than incorporated jurisdictions in their land use practices (since jurisdictions often incorporate to control their land use regulations) and therefore not comparable for the analysis.

<sup>12</sup> Specifically, the data set contains the addresses of at least three members of the board of directors for each HOA in Florida and these addresses can be assigned to unique municipalities. Even though the list is as of 2008, the death rate of HOAs over time is small enough to be considered negligible.

of parcels per capita in the jurisdiction that are in an HOA. This provides us with a way to account for the relative size of the HOA.

We combine our HOA data with land use management practices for a sample of jurisdictions in Florida. This data is a product of a survey conducted by Florida State University's DeVoe Moore Center in which they collected information on the nature and extent of land use management practices as of 2006. City and county planning officials were contacted and surveyed on which land use management techniques were used in their jurisdiction. In addition, the survey sought information about the regulatory climate of the jurisdiction by asking questions about the frequency of delays in development, the frequency of negotiations and the presence or absence of specific growth policies. This survey represents the most detailed, statewide exploration of land use techniques that we are aware of.

For our analysis, we measure the regulatory stringency of a jurisdiction by creating an index of land use management practices. In particular, we rely on responses to Question 4, which presented the planning official with 19 different land management techniques (e.g., incentive zoning, historic district zoning, large lot zoning, and impact fees) and asked the official to indicate which ones were used in their jurisdictions within the last 24 months. Table 2 gives a brief description of each of these techniques. We create a variable, *LANDUSECOUNT*, which is simply a count of how many of the 19 techniques the survey respondent said were used. We therefore make the assumption that a higher value for this variable indicates a stronger regulatory environment in the jurisdiction.<sup>13</sup>

In addition, we obtain economic, social, and housing characteristics for Florida municipalities from the U.S. decennial Census for 2000. Based on the availability of the various data sets, our sample includes the 232 municipalities that responded to the land use survey. Sample jurisdictions lie in 59 out of 67 counties in the state. Some counties are not represented because no jurisdiction within their borders responded to the land use survey.

### *Methodology*

The basic question motivating our analysis is the following: "Do HOAs demand more regulation on the part of the public sector?" For our analysis, we perform a linear regression<sup>14</sup> of the following form

$$\text{LANDUSECOUNT}_i = \alpha + \beta(\text{HOAmeasure}_i) + \gamma'(X_i) + \varepsilon_i.$$

We run separate models using two measures for the prevalence of HOAs in a jurisdiction: *HOASUM* and *PARCELPERCAP*. A positive  $\beta$  suggests that HOAs' presence increases the extent of local regulation. This could reflect a response to HOA demand for greater regulation on the part of the public sector. Alternatively, the HOA, and specifically its governing covenant restrictions, could simply serve as another layer of control in a jurisdiction where residents overall prefer more regulation (and perhaps more mechanisms for maintaining neighborhood exclusion or homogeneity). On the other hand, a negative

<sup>13</sup> This approach is in line with previous research looking at regulatory stringency. For other studies that use counts of regulations as an index for regulatory stringency, see Segal and Srinivasan (1985); Malpezzi (1996); and Green (1999).

<sup>14</sup> The count data nature of the dependent variable may violate normality assumptions and call linear regression into question. We have run negative binomial models that produce very similar qualitative results, but we choose to report the linear regression results for ease of interpretation and exposition. Nevertheless all results are available from the authors.



(or even null)  $\beta$  would suggest a lack of demand from the HOAs and the persistence of relatively looser regulatory standards. This might be particularly true if a jurisdiction feels less of a need to regulate development if the covenants governing the HOA are expected to fulfill this role.

In addition to the HOA prevalence variables, we also include control variables in  $X$  for demographic and economic factors that affect the level of regulation in a community. These standard variables include the jurisdiction population,<sup>15</sup> percent black, percent Hispanic, percent under 18 years of age, percent over 65 years of age, percent with a four-year university degree or higher, the median household income and the percent of households that own their homes. We recognize that differences in city age may also affect the stringency of land use regulation and the prevalence of HOAs. Older cities may be more regulated because they have had more time to implement a system of regulations; alternatively, they may be less regulated because, at the time of the survey, they were built out and had relatively little need for growth control. In addition, more recently incorporated cities may be more likely to form HOAs as they have become more “routine” over time. To test for city age effects, we also include the jurisdiction’s year of incorporation.

Finally, we considered including county fixed effects to control for unobserved heterogeneity across county areas. However, because there are many counties with only one city in our sample, including the effects would absorb much of the variation across our cities.<sup>16</sup> Therefore, we do not include county fixed effects. However, in recognition of the geographical and cultural differences across regions in Florida, we define two indicator variables: NORTHFLA, corresponding to the counties in the Panhandle; and SOUTHFLA, corresponding to the southernmost counties. The Panhandle is generally regarded as a “low-regulation” region, while South Florida has a well-established history of land use management. We include these as additional regressors in the full model.<sup>17</sup> A table of the variables used in the analysis is presented in Table 1.

### *Identification*

A potential endogeneity problem may threaten identification of the HOA coefficient. Reverse causality may arise, for instance, if a city’s reputation as highly regulated induces formation of HOAs. Therefore, as supplemental analysis we instrument our HOA prevalence variable with two variables that we posit affect the prevalence of HOAs in the jurisdiction but do not directly affect the presence of land use regulations.

The first instrument is the HOA measure lagged 15 years ago (i.e., as of 1993). For HOASUM, we denote the instrument as HOASUMLAG15; for PARCELPERCAP, the instrument is PARCELPERCAPLAG15. The justification for the relevance of the lagged value is that it is picking up some underlying institutional-driven or developer-driven

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<sup>15</sup> We include jurisdiction population in regressions using HOASUM as the dependent variable but not in regressions using PARCELPERCAP, as that measure has already been normalized by population.

<sup>16</sup> Indeed, when we run 2SLS specifications that include a set of county indicators, our key parameter  $\beta$ , in general, retains the same sign but loses statistical significance. These results are available from the authors.

<sup>17</sup> The regions are defined according to the boundaries of the Florida Regional Planning Councils, a map of which can be seen at <http://ncfrpc.org/state.html>. The NORTHFLA region consists of the West Florida, Apalachee, North Central Florida, and Northeast Florida planning councils. The SOUTHFLA region consists of the Southwest Florida, Treasure Coast, and South Florida planning councils. The left out region corresponds to the center of the state and consists of the Tampa Bay, Withlacoochee, East Central Florida, and Central Florida planning councils.

TABLE 1: Summary Statistics of Variables

Variable	Description	Mean	S. D.	Median	Min.	Max.	N
<i>HOA Variables</i>							
HOASUM	Number of HOAs	16.5	25.4	7	0	179	232
PARCELPERCAP	HOA parcels per capita	0.079	0.112	0.050	0	0.745	232
HOAAGE_OLD	Year of earliest HOA incorporation	1979.9	9.9	1979	1961	2007	181
HOAAGE_RECENT	Year of most recent HOA incorporation	2003.5	6.1	2006	1966	2008	181
AVGPARELINHOA	Average number of parcels per HOA	89.2	118.4	78.9	0	1028	232
<i>Additional Control Variables</i>							
PCTBLACK	Percent black	15.9	18.4	9.5	0	96.7	232
PCTHISP	Percent Hispanic	10.7	14.7	4.9	0	93.6	232
AGEUNDER18	Percent under 18	21.9	7.2	22.7	3.4	38.7	232
AGEOVER65	Percent over 65	20.3	10.9	17.8	4.2	79.1	232
BAPLUS	Percent with 4 years college or more	22.3	13.4	18.7	2.2	61.5	232
MEDINC	Median household income (in \$1000s)	41.3	17.6	36.5	15.5	132.4	232
HOMEOWN	Percent owner-occupied housing	59.1	13.2	58.7	22.3	95.1	232
YR_INCORP	Incorporation year of jurisdiction	1925.8	35.9	1925	1822	2005	232
POPULATION	Population in 2005 (in 1000s)	23.6	35.2	11.4	.11	249.1	232
NORTHFLA	Indicator for North Florida	0.129	0.336	0	0	1	232
SOUTHFLA	Indicator for South Florida	0.310	0.464	0	0	1	232
<i>Instruments</i>							
PARCELPERCAP-LAG15	HOA parcels per capita, lagged 15 years	0.042	0.079	0.017	0	0.633	232
VACANT72	Share of land that is undeveloped, 1972	0.416	0.287	0.440	0	0.958	232
<i>Dependent Variables</i>							
LANDUSECOUNT	Number of land use management techniques in use	5.46	3.40	5	0	15	232
INCENTIVIZING	Number of techniques that incentivize development	1.55	1.39	1	0	6	232
MANDATING	Number of techniques that restrict development	3.91	2.36	4	0	11	232

propensity for HOA development. Alternatively, the relevance criterion could be met if rival developers respond to the popularity of HOAs by building HOAs of their own.

To satisfy the exclusion restriction, it is necessary that HOA prevalence in 1993 does not affect levels of regulation in 2006, except through the channel of encouraging more HOAs. A way to bolster this claim would be if we saw cities' land use regulations being imposed after that dates, but our survey does not ask for implementation dates. However, the timing of Florida's experience with growth management legislation helps to substantiate this assumption. Recall that the GMA requires municipalities to draw up comprehensive plans that meet minimum state criteria. Feiock (2004) points out that final plans were approved in the "early and mid-1990s," and that "the revised land development regulations based on the plans were implemented shortly afterwards." Thus, the HOA prevalence in 1993 can plausibly be seen as predetermined to current land use regulations. In order for them to be exogenous, the lagged value also has to be free from any correlation arising from entrenched political behavior. We believe that a 15-year lag provides enough turnover in city councils that the assumption is defensible.<sup>18</sup>

The second instrument is VACANT72, the percentage of the city that consisted of developable (vacant) land as of 1972. We obtained land cover data from the U.S. Geological Survey from 1972. These data give the amount of land in each jurisdiction that is developable (that is, not already developed and not protected), current to 2008 municipal boundaries. We divide this by the total land area to obtain VACANT72. We argue that this variable is an appropriate IV for two reasons: first, VACANT72 should be correlated with the propensity of a jurisdiction to encourage HOAs, as an abundance of developable land likely indicates an underlying potential for development within the jurisdiction. (See, e.g., Burchfield et al., 2006.) Second, enough time has elapsed between 1972 and 2008 that vacant land area is not likely to have a direct impact of the presence or absence of current land use regulations. Again, to bolster this, we recall that all jurisdictions in the state had to draw up new comprehensive land use plans in 1985 (or at the earliest, 1975) as a result of the Growth Management Act.

## 6. RESULTS

### *HOAs in Florida*

Like trends for the rest of the country, HOAs in Florida have proliferated over the past 30 years and during the past decade in particular (see Figure 1). The first recorded HOA was established in 1959, and since 1990, the number of HOAs in Florida has increased by nearly 140 percent. To put this in context, the number of new housing units in Florida has increased by 14 percent during the same period, while the number of units in HOAs nationwide has increased by about 50 percent (CAI 2008). HOAs, however, are not evenly distributed across the state of Florida. The maps in Figure 2 illustrate HOA locations for the cities in our sample. HOAs are nearly nonexistent in 1970, but over time, they have primarily emerged along the coasts, and but also increasingly in the central peninsula and pockets of the northern panhandle. The number of HOAs in a particular jurisdiction varies considerably; as of 2008, some places have only one HOA while others have 300 or more. In practice, HOAs are more common in the unincorporated portions of the

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<sup>18</sup> As a check on our IV specifications, we have run models where the measure of HOA prevalence is based on those HOAs that existed as of 2003 (i.e., prior to the date of the land use survey), rather than 2008. These did not change the models qualitatively. For theoretical and applied papers that have justified the use of lagged endogenous variables as instruments, see Fisher (1965) and Villas-Boas and Winer (1999).

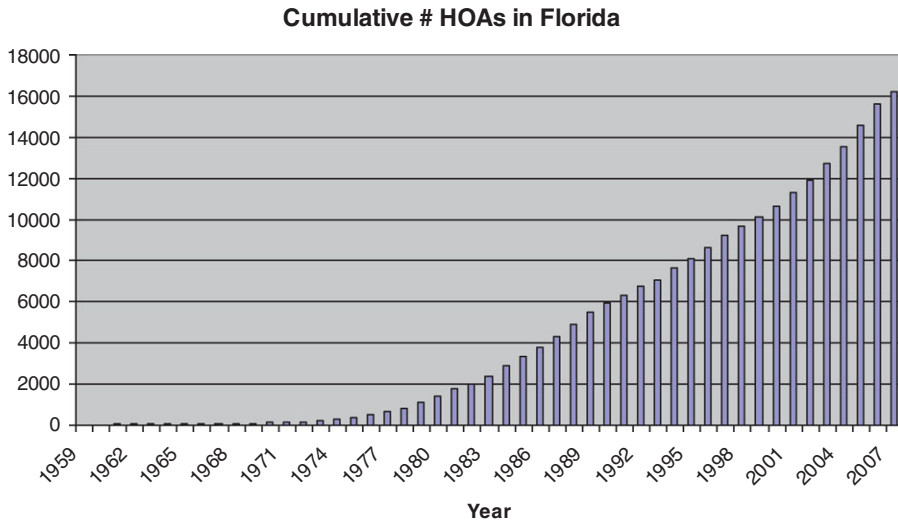


FIGURE 1: Number of HOAs in Florida Over Time.  
*Source: Meltzer (2009).*

county than in municipalities; Orlando, for example, has 139 HOAs, while Orange County has 424.

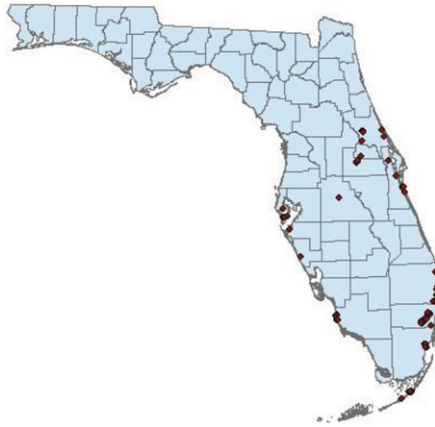
In regards to the sample for our analysis, Table 1 provides some summary statistics for our measures of HOA presence. The mean is larger than the median for both HOASUM and PARCELCAP, indicating that there are (i) a handful of jurisdictions that have large numbers of HOA (e.g., the cities of Orlando and Fort Myers), and (ii) there are some HOAs with very large number of parcels. This can be observed by the large range of the variable AVGPARELSINHOA, the average number of parcels per HOA in the jurisdiction. We also report some summary statistics on the age of HOAs: HOAAGE\_OLD is the year of the incorporation of the oldest HOA in the jurisdiction and HOAAGE\_RECENT is the year of incorporation of the youngest HOA in the jurisdiction. We will explore the role of HOA age later in the analysis; for now, we note the substantial heterogeneity in these variables as well.

#### *Land use Regulation in Florida*

Our count measure of land use management techniques, LANDUSECOUNT, reveals that there is significant heterogeneity within the state. Figure 3(a) shows the distribution of this measure in our sample. The median jurisdiction uses five out of the nineteen management techniques asked in the survey. However, some jurisdictions have markedly higher levels of regulation, with two jurisdictions reporting the use of fifteen techniques; on the other extreme, six jurisdictions report the use of zero techniques. A simple correlation matrix reveals that there is a positive correlation between LANDUSECOUNT and both HOASUM (0.35) and PARCELCAP (0.12). (Both are statistically significant at the 5 percent level.)

In Section 4 we discussed how HOA members are concerned with their property values and the nature of their immediate and extended communities; therefore they are more likely to influence regulation that directly affects them. We can expect two broad approaches to regulation as HOAs become more prevalent in a community: incentive-based or mandate-based.

1970



2008

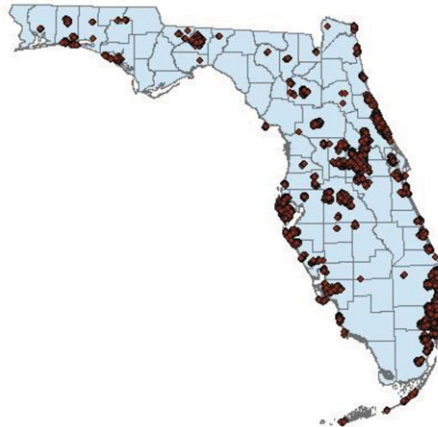


FIGURE 2: Spread of HOAs Across Florida.

*Note:* Figures show the locations of HOAs in our sample of 232 cities.

*(Source:* Authors' calculations.)

The incentive-based approach may be adopted in cities where HOA members want to retain some direct influence over the daily development process in the rest of the city. Therefore, HOA members will support regulation that (1) is flexible with respect to development and (2) can leave room for negotiation and control over specific projects. Rather than outright bans on what can or cannot be built, regulations that take this more progressive approach would give incentives to developers for setting up denser, and perhaps, mixed-used developments.

Alternatively, the mandate-based approach may be adopted if the goal of HOA members is to prevent certain kinds of future development from occurring altogether (such as commercial development or low-income housing). HOA prevalence would therefore be correlated with regulations that take a more traditional approach, one that seeks to mandate or forbid certain types of land use.

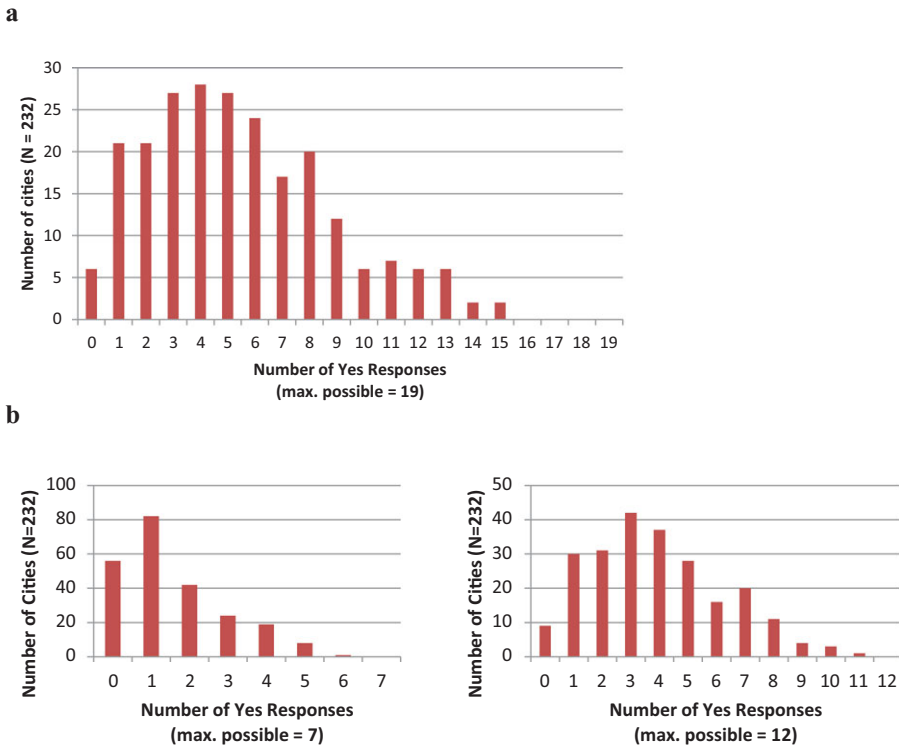


FIGURE 3: Histograms of Land Use Regulation Indices Used in Paper. (a) LANDUSECOUNT, (b) INCENTIVIZING and MANDATING. Source: Authors' calculations.

We address this variation here and create two subindices of land use management: INCENTIVIZING, which is a count of how many incentive-based techniques are in use; and MANDATING, a count of how many traditional or mandating techniques are in use. Table 2 describes how the 19 land use management techniques are divided into the two categories, while Figure 3(b) presents histograms of the subindices in the sample. Again, the histograms show a heterogeneous distribution of number of techniques in use. It is worthwhile to note that cities that have more incentivizing regulations tend to have more mandating regulations as well: the correlation between INCENTIVIZING and MANDATING is 0.62. As mentioned in the last section, the *a priori* relationship between HOAs and development techniques is ambiguous, and we explore this distinction in the latter half of the analysis.

*Regression Results*

Table 3 shows baseline results from the first part of our analysis. The dependent variable is LANDUSECOUNT for all these specifications. All standard errors are robust and clustered at the county level. We begin with OLS regressions. Specifications (1) and (2) suggest a positive correlation between the number of land use management techniques and the number of HOAs, and between land management techniques and per capita parcels (although the latter is not statistically significant). We then add a rich set of control variables into the model, and we see in column (3) that HOASUM decreases in magnitude.

TABLE 2: Number of Land Use Management Techniques Reported by Jurisdictions

Land Use Regulation Technique	Brief Description
<i>INCENTIVIZING Techniques:</i>	
Mixed-use development	A development that allows multiple compatible uses to be in close proximity.
Incentive zoning	Granting of additional development possibilities to a developer because of the developer's provision of a public benefit.
Performance zoning	Regulation of land uses according to their external or nuisance effects.
Form-based zoning	Rules that regulate the form (mix and dimension) of built environment, emphasizing the fitting of buildings to use and surroundings.
Transfer of development rights	The development potential of a particular piece of land is transferred to another; often used to compensate a landowner whose rights on one parcel had been restricted.
Inclusionary zoning	Incentives provided to developers to provide sites for low and moderate income housing.
Cluster development	The transfer of density from one portion of a parcel to another portion or project; allows the concentrating the total allowable dwelling units onto a tract of land into higher densities on a smaller portion of land.
<i>MANDATING Techniques:</i>	
Historic district ordinance	Restrictions on development on property of historic significance.
Floodplain zoning	Restrictions on development in areas prone to flooding.
Tree protection ordinance	Restrictions that promote the preservation of trees and native vegetation.
Large lot zoning	Requirement that each new house be constructed on a lot of a minimum size.
Severe slope regulation	Restrictions on development on steep slopes.
Open space zoning	Specifies a minimum percentage of a parcel that will remain undeveloped.
Land acquisition for public use	Regulates the acquisition of private land for public projects.
Conservation subdivision ordinance	Environmentally sensitive lands protected from activity that would alter ecological integrity.
Acquisition of conservation easements	A recorded legal agreement between a landowner and a qualified conservation agency that transfers development rights from the owner to the agency to protect natural or historic features.
Requirement of natural features inventory	Development requires the identification of environmentally significant features.
Zero lot-line zoning	Allows placing house on a lot so that one wall is on the property boundary. May include townhouse or condominium development.
Impact fees	Charge collected by a local government from a developer to pay for the increased costs generated by the development.

*Notes:* The descriptions of the various techniques come from several sources: "A Glossary of Land Use Terms" (Bartley, 2012); Department of Natural Resources, State of Wisconsin (2012); <http://www.1000fof.org/planning/UrbanForm.asp>.

LANDUSECOUNT comes from counting the number of "Yes" responses to the following question in the 2006 FSU Devote Moore Center Land Use Survey: "Which of the following Land Use Management Techniques have been used by your jurisdiction in the last 24 months? (Please check all that apply)."

We then divided the nineteen techniques in two categories: INCENTIVIZING and MANDATING, and we counted "Yes" responses within each category to create the subindices used in the analysis refinements.

TABLE 3: Regression Results: Specifications with Land Use Count Index

<i>Dep. Variable =</i> LANDUSECOUNT	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Estimation method</i>	OLS	OLS	OLS	OLS	2SLS	2SLS	2SLS	2SLS
HOASUM	0.048*** [0.009]		0.026** [0.011]		0.022** [0.011]		0.023** [0.011]	
PARCELPERCAP		3.668* [2.147]		2.953 [2.228]		2.953 [2.701]		3.421 [2.715]
PCTBLACK			-0.015 [0.012]	-0.018 [0.013]	-0.016 [0.012]	-0.018 [0.013]	-0.016 [0.012]	-0.017 [0.013]
PCTHISP			-0.003 [0.011]	-0.007 [0.013]	-0.004 [0.011]	-0.007 [0.013]	-0.004 [0.011]	-0.007 [0.013]
AGEUNDER18			0.056 [0.052]	0.045 [0.059]	0.057 [0.051]	0.045 [0.057]	0.056 [0.051]	0.046 [0.057]
AGEOVER65			0.032 [0.029]	0.001 [0.031]	0.032 [0.028]	0.001 [0.030]	0.032 [0.028]	0.001 [0.030]
BAPLUS			0.037 [0.034]	0.077* [0.038]	0.038 [0.033]	0.077** [0.037]	0.038 [0.033]	0.078** [0.037]
MEDINC			-0.005 [0.023]	-0.031 [0.028]	-0.006 [0.022]	-0.031 [0.027]	-0.005 [0.022]	-0.033 [0.027]
HOMEOWN			-0.020 [0.016]	-0.021 [0.017]	-0.020 [0.015]	-0.021 [0.017]	-0.020 [0.015]	-0.021 [0.017]
YR_INCORP			-0.019** [0.008]	-0.023*** [0.008]	-0.019*** [0.007]	-0.023*** [0.007]	-0.019*** [0.007]	-0.023*** [0.007]
NORTHFLA			1.314** [0.565]	0.875 [0.608]	1.301** [0.544]	0.875 [0.609]	1.303** [0.544]	0.847 [0.612]
SOUTHFLA			0.161 [0.586]	0.661 [0.544]	0.156 [0.561]	0.661 [0.522]	0.157 [0.562]	0.651 [0.523]
POPULATION			0.015 [0.011]		0.017 [0.011]		0.016 [0.011]	
Instruments					Lagged HOA	Lagged HOA	Lagged HOA; vacant land in 72	Lagged HOA; vacant land in 72
First-stage Cragg-Donald F					1470	521.6	761.4	270.1
Hansen overiden- tification <i>P</i> -value							0.588	0.043
Observations	232	232	232	232	232	232	232	232
<i>R</i> <sup>2</sup>	0.13	0.01	0.21	0.14	0.21	0.14	0.21	0.14

Robust standard errors, clustered at the county level, are in brackets. \*, \*\*, and \*\*\* denote significance at the 10, 5 and 1 percent levels, respectively.

To put the magnitude of the coefficient into perspective, a one standard deviation increase in the number of HOAs in a city leads to an increase in stringency equivalent to a little more than half a management technique.<sup>19</sup> This suggests a substantial impact that HOAs exert on the local land use regime. Our results are corroborated in Column (4), which shows that after adding control variables, while there is still a positive association between per capita HOA parcels and LANDUSECOUNT, it is still not statistically significant.

Before we proceed to the IV specifications, we discuss some of the other control variables. Higher proportions of blacks and Hispanics are not associated with more or less restrictive land use environments, a fact which runs counter to previous empirical literature (Boehm and Ihlanfeldt, 1991). There seems to be no effect of children, elderly or owner-occupied status on the regulatory count index. More educated households are associated with a more regulated land use environment in several of the specifications, but

<sup>19</sup> The standard deviation of HOASUM is 25.38. Multiplying by 0.026 gives 0.66.



not significantly in others. Surprisingly, in column (4) higher median household income is associated with less regulation, but that may be attributable to the high degree of correlation between it and education level.<sup>20</sup> We also find that the year of incorporation of city is negatively correlated with stringency of land use regulation, suggesting that older cities are more likely to have in place an array of regulations. Finally, we note the North Florida indicator control variable is positive, which suggests that jurisdictions in the Panhandle tend to use more land use management techniques relative to the omitted category, Central Florida. This runs counter to the expectation that the Panhandle is a “low-regulation” area of the state. However, we posit that this effect may be evidence of collinearity arising from the positive correlation between North Florida and city age.

We then move to 2SLS specifications that take into account potential endogeneity between HOAs and land use stringency. In general, we find that 2SLS and OLS results tell very similar stories. Columns (5) and (6) provide the 2SLS results with the lagged HOA values acting as instruments. The first-stage  $F$  statistics for both HOA counts and the HOA parcels are high enough to guard against the problem of weak instruments.<sup>21</sup> Column (5) suggests after correcting for endogeneity, the number of HOAs is still positively associated with LANDUSECOUNT, while Column (6) still finds no significant impact of HOA parcels per capita on stringency.

In the last two columns of the table, we present the 2SLS results with both the lagged HOA and VACANT72 as instruments. In column (7), a Sargan overidentification test of the instruments does not reject the null hypothesis that the instruments are uncorrelated with the error term at the 5 percent level, giving some confidence in the overall set of instruments. However, the low  $P$ -value for the overidentification test in Column (8) casts some doubt on the exogeneity of the IVs in this specification. The coefficients on the instruments in the first stage regressions, however, are both positive and significant. The sign and significance of the coefficients in front of the HOA variables are essentially unchanged, although it should be noted that the coefficient in front of PARCELPERCAP is borderline significant at 10 percent. Columns (7) and (8) are our preferred specifications, and both suggest a degree of complementarity between private HOA and public land use management.

### *Mechanisms of Complementarity: INCENTIVIZING Versus MANDATING Land Use Management Techniques*

Recognizing that the land use management index may confound two different approaches of adopting land use management, we refine our regressions by looking at the effect of HOAs on the two subindices of LANDUSECOUNT. Because HOA parcels per capita better controls for differences between jurisdiction and HOA sizes, our key measure of HOA activity will be PARCELPERCAP. We keep our rich set of control variables and report the results in Table 4. The OLS estimates are given in the first two columns; in Column (1), our dependent variable is INCENTIVIZING, while in Column (2), our dependent variable is MANDATING. Columns (3) through (6) present the 2SLS results. It is clear that HOAs exert a differential impact on the two subindices. More HOA parcels per capita in a jurisdiction are associated with a higher INCENTIVIZING index, which is in line with developers seeking out jurisdictions with more land use management techniques with an incentive-based approach. Column (5), our preferred specification, shows

<sup>20</sup> When education level is dropped as an independent variable in additional regressions, the sign in front of median household income indeed turns positive; in no case does the qualitative conclusion on the effect of HOAs change.

<sup>21</sup> See the Table A1 in the Appendix for first-stage regression results.

TABLE 4: Regression Results: Refinements on Land Use Count

<i>Dependent Variable =</i> <i>Estimation method</i>	(1)		(3)		(5)	
	INCENTI- VIZING OLS	(2) MANDATING OLS	INCENTI- VIZING 2SLS	(4) MANDATING 2SLS	INCENTI VIZING 2SLS	(6) MANDATING 2SLS
PARCELPERCAP	1.265* [0.723]	1.688 [1.642]	1.344* [0.737]	1.610 [2.128]	1.520** [0.739]	1.900 [2.148]
PCTBLACK	-0.005 [0.004]	-0.013 [0.010]	-0.005 [0.004]	-0.013 [0.010]	-0.005 [0.004]	-0.013 [0.010]
PCTHISP	0.001 [0.004]	-0.008 [0.010]	0.001 [0.004]	-0.008 [0.010]	0.002 [0.004]	-0.008 [0.010]
AGEUNDER18	-0.011 [0.020]	0.057 [0.044]	-0.011 [0.020]	0.057 [0.042]	-0.011 [0.020]	0.057 [0.042]
AGEOVER65	-0.013 [0.014]	0.014 [0.020]	-0.013 [0.014]	0.014 [0.019]	-0.013 [0.014]	0.014 [0.019]
BAPLUS	0.022 [0.014]	0.055** [0.027]	0.022 [0.013]	0.055** [0.026]	0.022 [0.013]	0.055** [0.026]
MEDINC	-0.018 [0.011]	-0.013 [0.018]	-0.018* [0.010]	-0.013 [0.017]	-0.019* [0.011]	-0.014 [0.018]
HOMEOWN	-0.007 [0.007]	-0.014 [0.014]	-0.007 [0.007]	-0.014 [0.013]	-0.007 [0.007]	-0.014 [0.013]
YR_INCORP	-0.009*** [0.003]	-0.014*** [0.005]	-0.009*** [0.003]	-0.014*** [0.005]	-0.009*** [0.003]	-0.014*** [0.005]
NORTHFLA	0.091 [0.293]	0.785* [0.424]	0.086 [0.289]	0.789* [0.426]	0.075 [0.290]	0.772* [0.427]
SOUTHFLA	0.402* [0.235]	0.259 [0.410]	0.400* [0.227]	0.261 [0.392]	0.396* [0.227]	0.254 [0.393]
Instruments			Lagged HOA	Lagged HOA	Lagged HOA; vacant land in 72	Lagged HOA; vacant land in 72
First-stage Cragg-Donald <i>F</i>			521.6	521.6	270.1	270.1
Hansen overidentification <i>P</i> -value					0.052	0.07
Observations	232	232	232	232	232	232
<i>R</i> <sup>2</sup>	0.11	0.14	0.11	0.14	0.11	0.14

Robust standard errors, clustered at the county level, are in brackets. \*, \*\* and \*\*\* denote significance at the 10, 5 and 1 percent levels, respectively.

that a one standard deviation increase in PARCELPERCAP raises the INCENTIVIZING index by 0.17.<sup>22</sup> As the mean of INCENTIVIZING is 1.55, this represents a substantial effect. This effect tempers the previous section’s finding that HOAs will demand more restrictive regulation in the local regime. It is also possible that jurisdictions with more progressive land use regulations are more likely to encourage HOA formation within their boundaries. Evidence for this is suggested by the fact that HOA parcels are not associated in any specification with MANDATING techniques.

A concern of our econometric approach is the crude nature of the count index. We run two robustness checks. First, we run specifications where the dependent variables are the individual land-use practices that make up the LANDUSECOUNT index.<sup>23</sup> All but two of the estimated coefficients on PARCELPERCAP were statistically insignificant. The large number of insignificant coefficients suggests that the count index is useful for painting an overall picture of regulatory stringency in a jurisdiction, a story that may be missed by considering individual techniques. As for the two significant specifications, HOA parcels

<sup>22</sup> The mean of PARCELPERCAP is 0.112. Multiplying by 1.520 gives 0.17.

<sup>23</sup> We do not include the regression results here, but they are available upon request.

are positively associated with the presence of cluster development, which fits its classification as INCENTIVIZING. This positive correlation makes sense since HOAs usually go hand-in-hand with the development of multiple lots (or subdivisions); this is a prime opportunity to exploit cluster development incentives. However, we find HOA parcels are positively associated with large lot zoning, which is classified as MANDATING. While these specifications are only illustrative, they do provide some evidence of robustness for the fact that HOAs are complementary to local regulation, and specifically incentivizing regulation.

Second, as the dependent variable is discrete, we rerun our specifications using a negative binomial model as opposed to least squares. Our qualitative results do not change: HOAs are still associated with more stringent land use regulation, particularly incentivizing and not mandating regulation.<sup>24</sup>

Finally, we run a series of robustness tests to ensure that our results are not being driven by a subjective classification of techniques as INCENTIVIZING and MANDATING. For each of the 19 techniques that make up LANDUSECOUNT, we switch its classification, one at a time—either from INCENTIVIZING to MANDATING, or from MANDATING to INCENTIVIZING. For example, “historic district ordinance” is originally classified as MANDATING. For the robustness check, we instead classify it as INCENTIVIZING, and we recalculate the two subindices for all 232 cities. We then rerun the 2SLS regressions of Columns (5) and (6) again. Then, we reset “historic district ordinance” back to its original classification, and we switch another technique over and run another set of regressions.

We find: (i) For 15 out of 19 techniques, switching one technique between INCENTIVIZING and MANDATING does not affect the significant positive association between INCENTIVIZING and HOA parcels per capita. For the other four techniques, the switch causes the coefficient to become statistically insignificant, yet the estimated sign is always still positive.<sup>25</sup> (ii) For 19 out of 19 techniques, switching one technique between INCENTIVIZING and MANDATING does not change the lack of association between MANDATING and HOA parcels per capita. This test suggests that our classification scheme is broadly robust to misclassification, and it highlights the importance of considering land use regulatory stringency as a “package” of regulatory tools, rather than focusing on individual techniques. Thus, the HOA impact is one that contributes to the overall incentivizing “climate” of a jurisdiction, rather than to the presence or absence of any one particular land use technique.

### *Mechanisms of Complementarity: HOA Size and Age*

In Table 5, we explore finer gradations in our data by examining the effect of HOAs of different sizes and ages. Is our main result of complementarity driven by larger, smaller, younger, or older HOAs? We derive a variable AVGPARELINHOA, which is the average number of parcels per HOA in the jurisdiction. The OLS specification in column (1) shows that the effect of the average parcel size is positive and statistically significant. This result is echoed in the 2SLS specification in Column (2), which includes the lagged HOA measure and the 1972 vacant land share as instruments.<sup>26</sup> This indicates that in places with bigger HOAs, the influence on the public land use regime is more intense.

<sup>24</sup> These regression results are available from the authors.

<sup>25</sup> These four are mixed-use development (which should be INCENTIVIZING), open-space zoning, land acquisition for public use and impact fees (all three of which should be MANDATING). Based on our knowledge of these regulations, we doubt they are likely to have been misclassified in the first place.

<sup>26</sup> If we include in the sample those cities without HOAs, and assign a value of zero for AVGPARELINHOA to these cities, we obtain a significantly positive coefficient on average parcel size. This

TABLE 5: Regression Results: Refinements on HOA Size and Age

<i>Dependent Variable =</i>	(1)	(2)	(3)
<i>Estimation method</i>	OLS	2SLS	2SLS
PARCELPERCAP	1.243 [2.439]	1.893 [2.789]	-1.506 [2.328]
AVGPARELINHOA	0.005** [0.003]	0.005** [0.002]	0.002 [0.002]
HOAAGE_OLD			-0.086*** [0.025]
HOAAGE_RECENT			0.135*** [0.020]
PCTBLACK	-0.015 [0.012]	-0.014 [0.012]	-0.018 [0.018]
PCTHISP	-0.006 [0.012]	-0.006 [0.012]	-0.016 [0.015]
AGEUNDER18	0.043 [0.060]	0.043 [0.057]	0.036 [0.077]
AGEOVER65	0.000 [0.029]	0.000 [0.028]	-0.017 [0.038]
BAPLUS	0.080** [0.038]	0.081** [0.037]	0.004 [0.044]
MEDINC	-0.024 [0.027]	-0.026 [0.026]	0.002 [0.032]
HOMEOWN	-0.023 [0.016]	-0.023 [0.015]	-0.022 [0.016]
YR_INCORP	-0.026*** [0.008]	-0.025*** [0.008]	-0.023*** [0.008]
NORTHFLA	0.504 [0.679]	0.480 [0.673]	0.741 [0.718]
SOUTHFLA	0.192 [0.520]	0.194 [0.506]	-0.457 [0.610]
Instruments		Lagged HOA; vacant land in 72	Lagged HOA; vacant land in 72
First-stage Cragg-Donald F		251.9	208.3
Hansen overidentification <i>P</i> -value		0.11	0.045
Observations	232	232	181
$R^2$	0.16	0.16	0.25

Robust standard errors, clustered at the county level, are in brackets. \*, \*\* and \*\*\* denote significance at the 10, 5 and 1 percent levels, respectively.

Finally, we examine the differential effect of older and newer HOAs. As we have in our data set the incorporation year of our HOAs, we include HOAAGE\_RECENT and HOAAGE\_OLD in column (3). As this variable is hard to interpret for those cities without any HOAs, we drop those cities from the sample. This table's sample is therefore the 181 cities that have at least one HOA. We see that the coefficient on HOAAGE\_RECENT is

provides weak evidence that larger HOAs are more able to effect changes in the land management regime, perhaps through better political organization capability. It also indicates that the mere existence of an HOA is a crucial determinant of the degree of regulation. These results are available from the authors upon request.

positive and significant, while HOAAGE\_OLD is negative and significant. These coefficients suggest that younger HOAs have a positive and relatively larger effect on the extent of local regulation. We posit that places with older HOAs might have more time to adjust their regulatory regimes in response to demands placed by the private HOAs (and pass some regulatory responsibilities onto the private HOAs). It also might indicate a shift in the motivation for HOA adoption: older HOAs may have been created to enhance what was perceived as “under-regulation,” while newer HOAs may be used as another layer of control in already highly regulated communities.

## 7. CONCLUSION

The broad proliferation of HOAs suggests that residents perceive a benefit from the supplemental services and regulation provided by these private governments. In other words, it appears as though the local government is not meeting their demand for certain public goods. In the case of land use management, it could be that the local government is not regulating enough, and that the HOAs provide enhanced control over the physical (and economic) nature of one’s neighborhood. On the other hand, the local government might already be engaged in relatively stringent land use management practices, and there is just an overall propensity for regulation that the HOAs complement. The nature of the interaction is theoretically ambiguous, and in the current paper we empirically test it.

We construct a novel data set of HOA membership in Florida municipalities and merge it with a recent survey of local land use stringency. We account for the simultaneity between local land use decisions and HOA development by instrumental variables. Results show that a higher number of HOAs is associated with a greater level of local land use regulation. In particular, HOAs are associated with the presence of more land management techniques that incentivize, but not with techniques that mandate. This suggests that the mechanism through which complementarity occurs may be through developer-municipal cooperation. In addition, places with relatively newer and bigger HOAs are associated with more land use regulation, indicating that HOAs created more recently embrace a larger set of regulations. This may be the result of recent HOAs’ greater ability to organize as management becomes more professionalized (indeed, HOAs work with lawyers, marketers, and developers). The power of HOA members as a unified front is also illustrated by the results on HOA size: whether it is a product of sheer numbers or more sophisticated organization, bigger HOAs appear to have more influence.

Although HOAs are private mechanisms for local public goods provision, the evidence from the current analysis suggests that they can still influence public sector decisions. This is an important finding for policymakers and local governments that might be tempted to leave HOAs (and other private governments) to the whims of the private market; indeed their existence has implications for both members and nonmembers. The tendency for HOAs to coexist with more incentivizing regulation is a useful, and perhaps surprising, result. It suggests that private associations, like HOAs, can be a mechanism for (more targeted) coordination among private citizens and municipal officials. It also characterizes HOAs (and their members) as influential players in local land use decisions and transactions. This has implications for the democratization of such a process—what about those citizens who are not represented by private associations? Are they then excluded from these conversations, unless they can form an alternative unified front? Such a process gives a great deal of power and legitimacy to homeowners, who are now presumed experts in land use management (or whatever the public policy might be). In the tradition of the “homevoter hypothesis,” (Fischel, 2005, p. 9), policy is driven by the homeowners in an attempt to preserve property values. However, the mechanism is intensified by the

ability to leverage the HOA as a unified voice (and one that is more influential the bigger it gets).

Ultimately, in order to understand the precise impact of HOAs on local land use regulation, we would need to observe the particular type of development activity and the nature of the homeowners' involvement in the decision-making process. Is it development of the type that reinforces the make-up of existing communities or are the relatively more flexible policies used to increase economic and demographic diversity in the jurisdiction? Does this new development improve the welfare of non-HOA members? How are homeowners inserting themselves in the land use process and are they making informed contributions? As fiscally strapped municipalities increasingly rely on private alternatives for service provision, it is important to understand their role in the welfare outcomes for the jurisdiction as a whole.

## APPENDIX

TABLE A1: First-Stage Regression Results: Endogenous HOA Regressors

	(1) Endogenous regressor = HOASUM	(2) Endogenous regressor = PARCELPERCAP	(3) Endogenous regressor = HOASUM	(4) Endogenous regressor = PARCELPERCAP
HOASUMLAG15	1.480*** [0.080]		1.457*** [0.081]	
PARCELPERCAPLAG15		1.200*** [0.060]		1.202*** [0.057]
VACANT72			4.923*** [1.662]	0.039** [0.015]
PCTBLACK	-0.030* [0.016]	-0.001*** [0.0002]	-0.027* [0.015]	-0.001*** [0.0002]
PCTHISP	0.010 [0.023]	-0.0003* [0.0002]	0.011 [0.022]	-0.0003* [0.0001]
AGEUNDER18	0.064 [0.070]	0.001 [0.001]	-0.022 [0.073]	-0.00002 [0.0001]
AGEOVER65	-0.078* [0.039]	-0.0003 [0.0004]	-0.111** [0.050]	-0.001 [0.0004]
BAPLUS	0.068* [0.035]	0.0002 [0.0005]	0.098** [0.040]	0.0003 [0.0004]
MEDINC	0.025 [0.033]	-0.0001 [0.0003]	0.034 [0.032]	-0.00002 [0.0003]
HOMEOWN	-0.059 [0.036]	-0.0001 [0.0003]	-0.085** [0.035]	-0.0003 [0.0003]
YR_INCORP	-0.036** [0.015]	-0.00002 [0.0001]	-0.038** [0.015]	-0.00002 [0.0001]
NORTHFLA	1.461 [1.201]	0.038* [0.021]	1.245 [1.253]	0.037* [0.021]
SOUTHFLA	-2.573* [1.392]	0.0002 [0.008]	-2.281* [1.343]	0.001 [0.008]
POPULATION	0.092*** [0.022]		0.092 [0.021]	
Observations	232	232	232	232

Robust standard errors, clustered at the county level, are in brackets. \*, \*\*, and \*\*\* denote significance at the 10, 5 and 1 percent levels, respectively.

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