Residential Property Values In Gated and Nongated Barrier Island Communities

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We examine how location in a gated community affects the value of single-family homes and whether beach valuation varies between communities. Using data on 2,358 sales on barrier islands near Charleston, South Carolina, the empirical results indicate that in a gated community, homeowners pay a premium of 37 percent for a house. In gated communities, a beach creates greater value for houses not on the oceanfront, relative to houses in nongated communities.

Introduction

In the past three decades, the private neighborhood association (PNA) has become the predominant legal form of housing developments in many of the United State's fastest growing areas[1]. Members of PNAs use explicit contracts that allow the community to make many of the decisions that local governments generally make. Among other activities, PNAs regulate property use, tax members to provide for local services, and collectively own shared areas, such as beaches. PNAs are popular in many countries throughout North and South America, Europe, Africa, and Asia (Webster, et al, 2002). In the United States, PNAs govern four-fifths of new housing developments and approximately 18 percent of the nation's population live in one of the 274,000 housing developments (Community Association Institute, 2005). Approximately 46,000 PNAs are gated communities (GCs), which are communities that restrict access to residents and their guests by building walls around the development[2].

A real estate developer would design a GC, which would be more costly to construct, if doing so would enhance revenues sufficiently. Some suggest that developers can earn more revenue in a gated community because housing is denser (McKenzie 1998). In addition, if property owners are willing to pay a premium for a house in a gated community, revenues will be higher. Residents may be willing to pay a premium for property in gated communities for several reasons. Homebuyers may prefer voluntary, private contracts to zoning, which use government policing power rather than contract law to enforce land controls. In addition, covenants may offer better protection for a homeowner's investment by controlling negative externalities more effectively. Creating a gated community may lead to greater homogeneity among members which would lower the costs of controlling negative externalities. This self-selection may lower the costs of free-riders, which would lead to outcomes that are more efficient. Thus, property values in gated communities may be higher because public goods such as open space may be better protected

1 We follow Robert Nelson's (2005) use of the term "private neighborhood association," although other terms such as "common interest developments" are often used.
2 In Australia, as many as 40,000 people live in gated communities, and the number is growing exponentially (Burke, 2001).

than in nongated communities (Pompe and Rinehart, 1997).

Some empirical analysis of a gated community's effect on housing value is available. Blakely and Snyder (1997) suggest that gates have no influence on property values, although they provide little empirical analysis. They suggest that any benefits created by gates may be reduced because GC members suffer from intrusive covenants and gates may signal an area with crime problems. Bible and Hsieh (2001) find that gates increase property value by approximately six percent in Shreveport, Louisiana neighborhoods. They believe that reduced traffic, increased prestige, and perceived greater safety create higher values in GCs. LaCour-Little and Malpezzi (2001) find that in a St. Louis neighborhood, houses in gated communities command a 26 percent premium over houses on unrestricted streets; they estimate that 17 percent of the premium is for the homeowner's association (HOA) and 9 percent for the gate.

In this study, we examine the effect that gates have on property values and factors that may influence a property owner's valuation of the beach.

Study area

The population in South Carolina's coastal counties, which has increased dramatically in recent decades, is now 1 million people. Housing prices have risen considerably in coastal areas, where four of the five fastest growing counties in the state are located. The median sale price of a coastal home increased by 25 percent from 2004 to 2005, compared to a state and national average of 10 and 6 percent, respectively (Young, 2005). We examine the housing markets for Dewees Island, Isle of Palms, Sullivan's Island, Folly Beach, Kiawah Island, and Seabrook Island, which are six barrier islands in the Charleston area. Barrier islands are elongated landforms that parallel, but are separate, from the mainland.

We examine four gated – Dewees Island, Wild Dunes, Kiawah Island, Seabrook Island – and three nongated - Isle of Palms, Sullivan's Island, Folly Beach - coastal communities. Development on the four gated communities began in 1991, 1975, 1976, and 1970, respectively. For three of the gated communities, (Dewees, Kiawah, and Seabrook), the community is the complete island. Wild Dunes is the only gated community on the Isle of Palms. The communities are distinct from each other geographically, because the islands separate each community, except for Wild Dunes and Isle of Palms, which are separated by the security gate. A bridge or causeway connects each island in this study to the mainland, except for Dewees Island, which has a single, community boat dock as the only entrance to the island. Each community is within 30 miles of Charleston, although the three nongated communities, which began development in the 19th century, are closer to the city than the gated communities are. Dewees Island is 12 miles northeast of Charleston, but because one must take a boat to the Isle of Palms, the length of travel time to Charleston is approximately 1 hour.

Each community has characteristics that make it unique. For example, Dewees Island, in order to minimize damage to the natural environment, enforces extensive restrictions on development such as allowing construction on only 35 percent of the island and not allowing automobiles. One difference between the gated and nongated communities is the age distribution in the community. Ap-

proximately 80 percent of the residents in Seabrook and Kiawah are over the age of sixty. In the Isle of Palms, Sullivan's Island, and Folly Beach, approximately 27 percent of the residents are over sixty. However, many demographic characteristics such as income, education, and property values are similar for the communities. Residents in each community, where all houses are within two miles of the shore, enjoy a "beach town" lifestyle. Residents' "lifestyle" describes an important feature of each community in our study and creates a homogeneous housing stock[3].

Coastal homeowners, who may be exposed to shoreline erosion, value wider beaches for their protection and recreational benefits (Pompe and Rinehart, 1999). In order to measure shoreline changes, South Carolina monitors 400 coastal survey markers, including 103 for the islands in this sample. Some sections of the six islands' shorelines have suffered severe erosion in the past five years[4]. For example, on northern end of the Isle of Palms, 150 feet of shoreline has been lost in recent years (State of the Beach, 2005). Although some areas of the barrier islands' shorelines experience severe erosion, the majority of the shoreline in this study is stable and some is accreting.

We obtained the sale price of a house and numerous other characteristics from the multiple listing service that is available to realtors. Our sample consists of 2,378 single-family homes that sold on the six barrier islands between January 2002 and December 2005. Although the average price of a gated house is 18 percent higher than a nongated house, the average price of a Sullivan's Island house is 83 percent higher than the average Seabrook house. Indeed, houses on Sullivan's Island, which are among the most expensive second-home real estate in the country, are on par with houses in Aspen, Nantucket, and Palm Beach (Higgins 2005). Although such comparisons do not adjust for numerous characteristics such as distance to the beach, our sample does not support the common perception that houses in gated communities are more expensive than nongated.

Hedonic model and empirical results

In order to determine the marginal contribution that a gate and other characteristics have on property values, we use hedonic regression analysis. Hedonic theory explains that because a house is a bundle of characteristics such as location and size, implicit prices of the individual characteristics can be estimated by multiple regression (Rosen, 1974). The hedonic model for the study is:

$$Pi = f(\mathrm{H}i, \mathrm{N}i, \mathrm{C}i)$$

3 Blakely and Snyder (1997) define three categories of gated communities: "lifestyle," where leisure activities such as golf are important; "elite," where prestige is a prime motivator; and "security," where fear of crime is the prime motivator. It is unlikely that residents value the gated communities in our sample for increased safety because crime rates are low on the six barrier islands.

4 For our sample period, survey markers near erosive areas include: Wild Dunes 3178, 3180; Isle of Palms 3167, 3175, 3180; Sullivan's Island 3085, 3090, 3092; Folly Beach 2860, 2863, 2865, 2867 2873, 2880, 2883, 2885, 2890. Shorelines are very dynamic and current erosion patterns can vary from long-run patterns. Five observations are erosive oceanfront and gated.

where *Pi* is the residential sale price of the *ith* property, H*i* is a vector of structural characteristics associated with the house (e.g., square footage), N*i* is a vector of neighborhood/location variables (e.g., waterfront location), C*i* is a vector of community variables (e.g., gated development).

We define the variables in Table 1 and summary descriptive statistics are in Table 2. In the semi-log functional form of the housing price function, which is reported in Table 3, most variables are significant and of expected sign. Of interest for our study is the variable indicating location in a GC (GATE), which estimates the value that homeowners place on locating in a gated community, holding other variables constant. The coefficient on GATE, which is significant, indicates that homeowners pay a 36.7 percent premium for a house in a GC[5]. Although this result does not explain why gates increase the property values, interaction variables combining location and beach quality provide some clues.

Beaches in the GCs are less crowded than public beaches because property owners and people renting housing are the only ones who have access to the beach in a GC. We use several interaction variables to determine if the increased privacy on GC beaches affects property values. GATEDBCH, which is an interaction variable between the distance that a house is from the beach (DBCH) and GATE, indicates that house farther from the beach are lower priced in gated communities, as would be expected. However, the distance from the beach decreases property value in GCs by a lesser amount than in nongated (NONGTDBCH) communities. We hypothesize that a GC property owner places greater value on locations near the beach because the GC restricts access, which decreases beach congestion and creates a more pleasant beach experience.

GTOCNFR and NONGTOCNFR, which indicate the value of an oceanfront location in a gated and nongated community, respectively, are positive and significant. For property in a GC, location on the oceanfront adds 113 percent to house value; for nongated communities oceanfront location adds 132 percent to sale price. A prime location, such as a GC oceanfront, may be lower value, relative to nongated, because the beach is more private and less congested in a GC[6]. Therefore, prime locations in GC are not as valuable as locations in nongated locations.

We include interaction variables for proximity to a severely erosive section of beach for oceanfront location (EROSOCNFRNT) and for properties that are near the erosive section but not on the oceanfront (EROSDBCH). EROSDBCH is significant and negative, but EROSDBCH is not significant. This suggests that although severe erosion is of concern to oceanfront property-owners, those located farther away do not discount house value because of a nearby erosive shoreline. This result suggests that because oceanfront owners would value shoreline protection more than those farther back from the ocean, oceanfront residents should pay more for shoreline protection.

5 When the dependent variable is in log form, a dummy variable must be adjusted by $100*(e^{b1}-1)$ percent, where b1 is the coefficient of the dummy variable (Kennedy, 1981).
6 In a separate equation, the interaction variables entered were GTOCNFR, GTDBCH, and GTSQFT. In this equation, GTOCNFR was negative and GTDBCH and GTSQFT were positive. This supports the above results that in a GC, oceanfront property and non-oceanfront property are lower and higher valued, respectively, than similar properties in nongated communities.

Variable	Definition
PRICE	Sale price of house
DI	Dummy variable: 1 if Dewees Island, 0 otherwise
WD	Dummy variable: 1 if Wild Dunes, 0 otherwise
IOP	Dummy variable: 1 if Isle of Palms, 0 otherwise
SI	Dummy variable: 1 if Sullivan's Island, 0 otherwise
FB	Dummy variable: 1 if Folly Beach, 0 otherwise
KI	Dummy variable: 1 if Kiawah Island, 0 otherwise
SEA	Dummy variable: 1 if Seabrook Island, 0 otherwise
GATE	Dummy variable: 1 if gated, 0 otherwise
MRSH	Marsh location
WTVW	Waterview
WTRFRNT	Waterfront location
SQFT	Square feet of house
AGE	Age of house (years)
AGESQUARE	Age of house squared
YR(TWO)	House sold in (2002), 2003, 2004, or 2005
EROS	Located near severe erosion
DBCH	Distance from beach (miles)
EROSOCNF	Severe erosion near oceanfront house
EROSDBCH	Distance from severe erosion
GTOCNFRNT	Oceanfront location in GC
NONGTOCNFRNT	Oceanfront location in nongated community
GTDBCH	Distance from beach for gated property
NONGTDBCH	Distance from beach for nongated property

Table 1 *Variable definitions*

We include a dummy variable for each community, except for Folly Beach and Dewees Island, which are omitted and are reflected in the constant term. The community variables show that residents prefer some communities to others. Houses on SI enjoy a premium over FB houses and houses on SEA are discounted relative to DI, for example. Most other variables are significant and perform as would be expected. The location variables WTFRNT, WTVW, and MARSH, are each positive and significant. WTVW adds 37 percent to housing values, for example. SQFT, the amount of square footage, is significant and positive. We include AGE and AGESQ because the age of a house may affect house prices nonlinearly. We include a dummy variable for year of sale (YEARTHREE, etc.) to control for price inflation and changes in the housing market. The base year is 2002.

Conclusion

In this study, we examined factors that affect property values in three nongated and four gated communities on barrier islands near Charleston, South Carolina. Of particular interest was the impact GCs and beaches have on property value. We find that after controlling for other factors, a house in a GC will have a 37 percent higher value, than a nongated community house. For our sample, if the av-

Variable	Mean	Std.Dev.	Minimum	Maximum
PRICE	899394.626	701910.220	103492.000	7500000.00
DI	.424088210E-02	.649976051E-01	.000000000	1.00000000
WD	.191263783	.393379683	.000000000	1.00000000
IOP	.190839695	.393046334	.000000000	1.00000000
SI	.720949958E-01	.258700000	.000000000	1.00000000
FB	.144189992	.351356788	.000000000	1.00000000
KI	.249787956	.432982030	.000000000	1.00000000
SEA	.147582697	.354761072	.000000000	1.00000000
GATE	.592875318	.491402669	.000000000	1.00000000
NONGATE	.407124682	.491402669	.000000000	1.00000000
MRSH	.729431722E-01	.260098358	.000000000	1.00000000
WTVW	.780322307E-01	.268279192	.000000000	1.00000000
WTFRNT	.377438507E-01	.190616530	.000000000	1.00000000
OCNFR	.699745547E-01	.255158239	.000000000	1.00000000
YRTWO	.198897371	.399255317	.000000000	1.00000000
YRTHRE	.234944869	.424054286	.000000000	1.00000000
YRFOUR	.292196777	.454868736	.000000000	1.00000000
YRFIVE	.273960984	.446083796	.000000000	1.00000000
SQFT	2373.40797	1013.31669	200.000000	7189.00000
AGE	22.8235793	19.8938913	.000000000	179.000000
EROS	.958439355E-01	.294439538	.000000000	1.00000000
DBCH	.340567396	.329318665	.000000000	2.00000000
AGESQ	916.514843	1944.43676	.000000000	32041.0000
EROSOCNF	.106022053E-01	.102441442	.000000000	1.00000000
EROSDBCH	.168023749E-01	.753408037E-01	.000000000	.500000000
GATEDBCH	.262925785	.330842085	.000000000	1.71000000
NONGTDBC	.835703647E-01	.209963868	.000000000	2.00000000
GATEOCNF	.220525869E-01	.146885739	.000000000	1.00000000
NONGTOCN	.479219678E-01	.213646461	.000000000	1.00000000

Table 2 *Descriptive statistics*

erage nongated house, which sold for $810,779, were located in a GC, the house would sell for $1,110,767. The premium for a GC house is significantly higher in this study than the two studies noted earlier, which showed premiums of 6 and 26 percent. We expect that a primary reason that GC homeowners are willing to pay more for a house is that voluntary agreements in GCs reduce the free-rider problem and homeowner investment risk. In addition, we find that residents in GCs place higher value on proximity to the beach than residents in nongated communities. The results suggest that less congested beaches add to a GC's value.

Attention on PNAs and GCs has been increasing recent years. For example, the entire March 2005 issue of *Housing Studies* was devoted to gated communities, and international conferences have been devoted to the issue. Our study provides information about GCs and coastal communities that may be beneficial to policy makers as they deal with the problems associated with growing populations along shorelines. For example, the National Oceanic and Atmospheric Administration website that discusses "Alternatives for Coastal Development," suggests that in order to achieve "smart growth," community development should be "fair and cost-effective." Beach renourishment can be a continual maintenance cost for coastal communities. Our results suggest that an equitable distribution of shoreline protection costs would place higher payments on oceanfront property owners, both for

Variable	Coefficient	t-statistic
Constant	12.47713890	301.885
WD	-.1796550614	-1.523
IOP	.2004762588	7.221
SI	.3223665945	8.294
KI	-.1923151052E-01	-.163
SEA	-.4460133802	-3.698
GATE	.3893558172	3.252
MRSH	.1792233789	5.795
WTVW	.3139982345	10.338
WTFRNT	.4311908627	10.403
YRTHRE	.9567326836E-01	4.143
YRFOUR	.2231158622	10.080
YRFIVE	.4755082477	21.069
SQFT	.3103641310E-03	33.013
AGE	-.9911530802E-02	-9.181
AGESQ	.7656542885E-04	7.379
EROSOCNF	-.1605600942	-1.986
EROSDBCH	.3143732757E-01	.283
GATEDBCH	-.2232049540	-5.696
NONGTDBC	-.3054456534	-6.869
GATEOCNF	.7570403512	13.416
NONGTOCN	.8401226867	20.252

Observations=2358, Adjusted R-squared=.68

Table 3 *House price function estimates*

gated and nongated communities. Using the model discussed above could create a fairer system to pay for beach nourishment by allocating the costs of nourishment to those who receive the benefit.

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