The Effect of Golf Course Location on Housing Value

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ABSTRACT

Structural and locational characteristics are known to affect housing prices, and numerous studies have explored many of these characteristics. However very little empirical information was available on the effect of golf course location for improved property. Two recent studies find that building on a golf course adds 7 to 8 percent to the value of property. However, we find that for a private development on a barrier island, building a villa or single family home on a golf course does not have any significant impact on price. Specific locational factors may explain this unexpected result.

INTRODUCTION

Housing is a composite, heterogeneous good, comprised of a bundle of characteristics that determines the price people are willing to pay for the good. The hedonic price technique is used to determine the effect of a particular characteristic. Numerous studies have examined the relationship between real estate prices and various structural characteristics such as lot size, house square footage, number of bedrooms, and age of structure. Additional research has also investigated the value imputed to property because of location-specific characteristics such as school quality (Jud, 1985), proximity to a beach (Edwards and Gable, 1991), and location near a hazardous waste site (Kiel, 1995).

Until two recent studies however, scant information had been available concerning the value of a golf course location. Do and Grudnitski (1995) estimate that building a house on a golf course adds 7.6 percent to the property's sale price. They suggest that property owners are willing to pay this premium in exchange for enhanced views, greater privacy, and the benefits associated with lower population density. Asabere and Huffman (1996) find that while golf course frontage yields a 7 to 8 percent premium, the value of homes nearby is negatively affected. The authors suggest that the increased traffic and noise from golfers may depress housing values.

We contribute to the effort to assess the value of a golf course location on developed property prices with an empirical study of single family homes and villas on a coastal barrier island. We find evidence that for Seabrook Island, South Carolina, golf course location does not have any significant impact on the value of villas and single family homes.

SEABROOK ISLAND

Much of the East and Gulf coast of the United States is protected from the brunt of storms and their resultant destruction by narrow strips of sand and wetlands known as barrier islands. The 2,700 miles of barrier islands stretching along the coastline of the United States also buffer the mainland from the normal scour of waves, wind, and currents. Despite the obvious risks of damage to life and property from storms and flooding, the development of these islands is proceeding at a rapid pace. Perhaps the main reason is that the natural environment of these islands provides the opportunity for many recreational experiences specifically related to sun, water, sand, and marsh. Additionally, most island developments provide numerous man-made amenities such as tennis courts, swimming pools, and golf courses.

Seabrook Island is a beach ridge barrier island located approximately 20 miles south of Charleston, South Carolina. The Island consists of 2,200 acres of land, and 3.5 miles of beach bordered by the North Edisto and Kiawah Rivers and Bohicket Creek. Seabrook is a privately developed residential community with entrance strictly limited to property owners, their guests, and renters. The Island has a non-commercial atmosphere and is heavily forested with live oaks, pines, palms and magnolias. Wildlife is abundant including numerous deer, alligators, rabbits, squirrels, and birds. Except for the Club at Seabrook Island, whose members patronize a golf and tennis shop, several restaurants, and a small, general store near the ocean, traditional commercial establishments such as grocery stores, banks, gasoline stations, and department stores are not located in the community.

The Seabrook Development Corporation, a private company, acquired the Island in 1970 and commenced development. Seabrook has approximately 2,350 separate, privately-owned properties, consisting of 495 single family homes, 1,003 villas, and 852 undeveloped lots. Approximately 80% of the villas are in a rental program, while less than 10% of single family homes are in the rental program. Lot prices range from $25,000 for an interior lot with no view or direct water access to more than $1 million for the most expensive ocean front lot. All properties are serviced by underground utilities, and most lots are heavily wooded and attractively spaced along winding streets. Building standards are very high, and the environmental impact of all construction is monitored by local building, licensing, and planning boards.

The community includes two golf courses, numerous tennis courts, and a variety of lakes, lagoons, marshes, and creeks. One golf course designed by Robert Trent Jones is located primarily in the interior of the Island, and the other designed by William Byrd is situated near the Ocean. Houses and villas are built along most of the fairways. We measure the price effect of location on a golf course for developed properties on Seabrook Island, South Carolina.

MODEL AND DATA SET

To determine the value to property owners of location on a golf course we estimate a hedonic price model. The hedonic technique describes the supply and demand conditions necessary to calculate a particular attribute's contribution to the total value of a property (Rosen, 1974). The general form of the hedonic price model is:

$$P_i = a_o + B_1S_i + B_2L_i + B_3A_{i\ i} + E_i \qquad (1)$$

where a_o = a scalar
B_1, B_2, B_3 = vectors of parameters
P_i = the price of the ith house
S_i = a vector of structural characteristics
L_i = a vector of locational characteristics
A_i = a vector of environmental amenities
E_i = a stochastic disturbance term

The empirical analysis is based on data collected on single family homes and villas located on Seabrook Island. Eighty-five single family homes and 153 villas that were sold during the period from January 1989 to July 1994 comprise the sample. Selling price, location, and structural characteristics such as square footage, number of rooms, and age of structure were obtained from the Charleston Trident Association of Realtors. Numerous visits to the Island were conducted to obtain and verify information requiring actual sight. Variables such as location on a golf course, ocean, or creek, and ocean views were determined from detailed area maps and visits to the Island. Distance variables were derived from various area maps. Variable definitions, means, and standard deviations are listed in Tables 1 and 2 for single family homes and villas, respectively. The explanatory variables were chosen based on previous empirical research with hedonic models, as well as economic theory.

The deflated selling price of structure (SP) is the nominal sale price adjusted to 1989 dollars with the Boeckh index, a regional cost of building index. Structural variables include the age of the house (AG), the square feet of the structure (SQFT), the number of bedrooms (BD), and the number of bathrooms (BTH). Variables capturing the effects of location are a dummy variable for location

on a golf course (GOLF), a dummy variable indicating that the structure is built on a creek or marsh (CRK), and a dummy variable for a structure on the oceanfront (OCNF). The dummy variable indicating that the structure has an ocean view (OCNV), includes all oceanfront houses and those houses that have a clear view of the ocean, even if not on the beach.[1] We include a variable measuring the distance from a residence to the Beach Club (DCLB), the only location on the Island to purchase sundries. This also the location of the golf pro shop and Island restaurants.

Two variables are included in the hedonic model to capture the influence of beach width on property value - the width of nearest beach at high tide (WBHT) and an interaction variable (DBCH) created by multiplying distance to the nearest beach by beach width.[2] A series of survey markers spaced strategically along the shoreline provides the beach width measurements. The survey marker readings, which are monitored by the South Carolina office of Ocean and Coastal Resource Management, are made approximately every six months and provide critical data for State coastal policies. Since using only distance to beach would not capture the full impact of beach width, we use the interaction variable. Distance to the nearest beach area was measured by road distance.

Since the sale dates range from 1989 to 1994, a time trend variable, the month the structure was sold (MON), is also included to reflect appreciation or depreciation of housing over this period. MON covers a range of 1 through 67, where property sold in January 1989 is 1, and property sold in December 1994 equals 67. The length of time between listing and sale date (LT) adjusts for sales that involve very short or long holding periods.

The age of the structure (AG) is expected to be negatively related to housing price, while the other structural variables, i.e. SQFT, BD, BTH are expected to affect price positively. OCN, OCNF, and CRK are also expected to affect housing values positively. Wider beaches (WBHT) provide recreational and protection benefits for property owners and therefore are expected to have a positive influence on housing prices. Houses located closer to the beach are expected to have higher prices, other things constant, since less travel time to the beach is required. Therefore the sign for DBCH should be negative.

The average single family home, which sold for $218,190, is 6 years old and was sold 11 months after being listed, while the average villa, which sold for $93,139 is 11 years old and was sold 11 months after being listed. The average single family home has 2,336 square feet, 3.2 bedrooms, and 2.9 bathrooms, and the average villa has 1,211 square feet, 2.0 bedrooms, and 2.0 bathrooms. Eighteen percent of single family homes and thirty-three percent of villas are located on a golf course. Marsh or creek views are plentiful with 18 percent and 22 percent respectively so situated. Eight percent of single family homes have ocean views while 9 percent of villas have such views. One percent of single family homes and 2 percent of villas are located on the oceanfront.

The average single family home is 5,364 feet away from the beach, which averages 234 feet, while the average villa is 6180 feet from the beach which averages 225 at high tide.

Other variables sometimes used in hedonic models, such as distance to business and school districts, are not included in the model. Since all observations in the data set are from Seabrook, which is devoid of schools and commercial establishments (with the single exception mentioned earlier), and uniform with respect to incomes, the omittance of these variables should not affect the results.

EMPIRICAL RESULTS

Since the majority of villas are rented while most single family homes are not, we tested for market segmentation. Based an F-test for the reduction in the sum of squared residuals, the markets for single family homes is judged to be different from the market for villas (Pindyck and Rubinfeld, 123-24). Therefore, separate regressions are estimated for single family homes and villas.

The ordinary least squares estimates of the hedonic price models for single family homes and villas are listed in Table 3, along with their t-values. Based on a test using the Box-Cox (1964) transformation technique the double-log functional form was chosen over the linear and semi-log forms. The dependent variable is the natural logarithm of the deflated selling price. The adjusted R^2 is .86 for villas and .73 for single family homes, while most of the variables are significant and of the correct sign. Since OCNV and OCNF are strongly correlated, only OCNV is used in the equation.

The trend variable, MON, is negative, although significant only for villas, indicating that sale prices for this period are declining. This may be due to the effects of Hurricane Hugo, which came ashore in the vicinity of Charleston, South Carolina in September of 1989. Also bankruptcy problems experienced by the developers in recent years and changes in the 1986 tax law may also explain the declining prices. LT is negative as expected, but significant at the 10 percent level only for single family homes.

As expected WBHT is positive and significant, indicating that property buyers value wider beaches. DBCH is negative, indicating that houses farther from the beach decrease in value, other factors being constant. CRK and OCNV are positive, indicating the importance of location on water to homeowners. Location on a marsh or creek area add about 9 (single family homes) and 14 (villas) percent, while ocean views add about 40 (single family homes) and 33 (villas) percent to value.[3] Signs for the structural variables (SQFT, BD, BTH) are positive as expected, except for

BD in the single family homes model, and BTH in the villas model. AG is negative as expected but only significant for single family homes.

The variable of interest for our study, GOLF, is negative for villas and positive for single family homes, although insignificant in both models.[4] Although the results may be somewhat unexpected, specific conditions of our data set may explain the conundrum.

On many barrier islands, good substitutes for the factors that make a golf course location desirable (e.g., views, privacy, and open spaces) are readily available. On Seabrook, or any development built along bodies of water, water views (ocean, marsh, and creek), compete with golf course views. For our sample, 23 percent of single family homes, and 39 percent of villas, have some type of water view. Additionally, houses on Seabrook are built on rather large lots, with covenants strictly enforcing the open space. All building plans must be presented to an architectural review board, which oversees the actual location of the structure on the property in addition to the actual construction. Trees, plants, and topography are protected in order to achieve ambiance and privacy.

Similar conditions may exist in other golf communities where developers protect desirable environmental amenities. Since 1989, 793 golf communities have been built in the United States. Families moving to these communities are attracted by many non-golf attractions, including security, cachet, control over construction, and open space. (Dugas, 1997) Indeed, in a recent survey of homeowners in master-planned communities, the most desirable amenities were walking paths, bike trails, and nature preserves, with golf courses ranked last. (Fletcher, 1997)

Another factor in our sample is the large percentage of villas that are in the rental program. In the opinion of one real estate analyst knowledgeable of the area, the most important factor for renters is the distance to the beach. Villa buyers, therefore, would tend to discount the golf course location since they are more interested in the rental dollars than any personal satisfaction associated with a golf course location.

Additionally, negative externalities may arise from a golf course location. Heavy golfer traffic can be annoying, and privacy may actually be reduced. Families may have an increased concern for the safety of children, as well. Moreover golf courses are sprayed with large amounts of pesticides and herbicides, which can produce environmental concerns, especially for property owners nearby.[5] Dewees Island, a private development which is currently being developed north of Charleston, is specifically designed to omit golf courses.

A study by Peiser and Schwann (1993) on the value to homeowners of greenways offers support for the conclusions of our study. Using a hedonic pricing model, they find for a subdivision in Dallas that although homeowners value the open space from a greenway, when the greenway causes a reduction of private backyard space the homeowners place a much higher value on the private space than the public space. For example, an additional foot of private space is $382.72 while an additional foot of greenway space is $3.83. They also conducted a survey of homeowners to determine the value of living on a greenway. Almost all homeowners valued greenways, whether they lived on the greenway or not. This would likely be the case for golf courses also.

TABLE 1
Variable Definitions, Symbols, and
Descriptive Statistics of Single Family Home (N=85)

Variable Definition	Symbol	Mean	Std. Dev.
Selling price of structure (deflated)	SP	218,190	95,679
Age of structure (years)	AG	5.90	5.04
Size of structure (square feet)	SQFT	2336.30	631.15
Number of bathrooms	BTH	2.90	0.74
Number of bedrooms	BD	3.18	0.48
Dummy variable (1=located on golf course)	GOLF	0.18	0.38
Dummy Variable (1=located on creek)	CRK	0.18	0.47
Dummy Variable (1=view of ocean)	OCNV	0.08	0.28
Dummy Variable (1=located on ocean)	OCNF	0.01	.11
Width of beach at high tide (feet)	WBHT	233.69	229.58
Distance to nearest beach (feet)	DBCH	5363.50	3378.10
Distance to beach club	DCLB	6422.40	3488.10
Length of Time on market (months)	LT	10.67	9.25
Month of sale, 1 (Jan. 1989) through 67 (July 1994)	MON	45.53	15.25

TABLE 2
Variable Definitions, Symbols, and Descriptive Statistics of Villas (N=153)

Variable Definition	Symbol	Mean	Std.Dev.
Selling price of structure (deflated)	SP	93,139	48,525
Age of structure (years)	AG	10.83	3.43
Size of structure (square feet)	SQFT	1211.40	301.83
Number of bathrooms	BTH	2.04	0.43
Number of bedrooms	BD	2.05	0.74
Dummy variable(1=located on golf course)	GOLF	0.33	0.47
Table 2 (Continued)			
Variable Definition	**Symbol**	**Mean**	**Std.Dev.**
Dummy Variable (1=located on creek)	CRK	0.22	0.44
Dummy Variable (1=view of ocean)	OCNV	0.13	0.34
Dummy Variable (1=located on ocean)	OCNF	0.02	.16
Width of beach at high tide (feet)	WBHT	225.37	222.16
Distance to nearest beach (feet)	DBCH	6180.40	4488.30
Distance to beach club (feet)	DCLB	7691.80	5018.20
Length of Time on market (months)	LT	11.51	11.41
Month of sale, 1 (Jan. 1989) through 67 (July 1994)	MON	45.26	15.58

TABLE 3
Estimates of Hedonic Model

	Single Family Homes		Villas	
Symbol	**Coefficient**	**T-Value**	**Coefficient**	**T-Value**
ONE	7.06326	5.970	8.282510	8.543
AG	-0.06705	-2.691	-0.007330 **	-.168
SQFT	0.57657	3.756	0.714023	5.798
BTH	0.32899	2.586	-.078484 **	-.851
BD	-0.04580 **	-0.275	0.444921	6.735
GOLF	0.06945 **	1.065	-0.014751 **	-.422
CRK	0.08700 *	1.640	0.135656	3.054
OCNV	0.39988	4.496	0.332371	5.618
WBHT	0.18620	2.566	0.321898	9.676
DBCH	-0.24135	-3.072	-0.316237	-9.158
DCLB	0.36203	3.289	.095140	2.563
LT	-0.04736 *	-1.815	-0.004423 **	-.296
MON	-0.07346 **	-1.617	-0.121311	-3.838
	N = 85		N = 153	
	Adj. R^2 = 0.726		Adj. R^2 = 0.856	
	F = 19.584		F = 76.151	

All variables are significant at 1% except for:
* Significant at 10%, ** Not significant

Dependent Variable = natural logarithm of deflated selling price of structure

CONCLUSION

This study indicates that on Seabrook Island, golf course location is not a significant determinant of price. Our findings may be the result of conditions specific to the area, although similar conditions may be found in many other golf course communities. The various recreational amenities of an island provide very good substitutes for the desirable aspects of golf course location.

Although Seabrook can be classified as a golf community, there are numerous amenities that property owners find valuable. Also, since a large percentage of villas are used for rental, the beach amenity is particularly important.

Although it is highly likely that a golf course in a private development, such as Seabrook, adds significant value to housing in general, it is possible that competing views and overall planning of the development negate any benefit to an individual house located on a golf course. Supporting this conclusion is the fact that the variables in the model that measure the value of water view (creek, marsh, and oceanfront) are significant and positive.

Since 1989, in the United States almost 500,000 building lots have been planned for golf course communities. In the Myrtle Beach area of South Carolina alone there are more than 120 golf courses (with more on the way) and most fairways have building lots. Developers may find that locational factors other than golf course location have a greater positive impact on lot values, and therefore may find it more profitable to protect and enhance natural areas.

Our study contributes to the limited information available on the impact of golf course location on housing value. This study shows the value of duplicating studies, since site-specific factors may not be constant for all locations. For example, well-designed, gated communities such as Seabrook may negate some of the positive externalities of golf course location. Analogously, although a road cul-de-sac creates privacy and would be expected to positively affect price, it would not be as important if total traffic volume is limited as is the case with a gated, private community, such as Seabrook.

Although this study concerns a private development on a coastal barrier island, the results have wider application. Our findings represent valuable information for developers as they plan the original layout of a development, and appraisers as they weigh golf course location, among other factors, in property assessment. Hopefully, further analysis will clarify the conditions that produce positive and negative effects of a golf course location.

NOTES

[1] Properties with a view on the southwest side of the Island, bordering the mouth of the Edisto River are designated ocean view, since the ocean is visible from this point.

[2] Pompe and Rinehart (1994) show that beach width and distance to beach are significant variables for coastal property valuation.

[3] Plattner and Campbell (1978) estimate that views of a pond increase property values by about 9 percent. Other studies find that good views increase property values by 4 percent (Do and Sirmans, 1994) and 8 percent (Rodriguez and Sirmans, 1994).

[4] These results are the same for both the linear and semi-logarithmic models for both single family homes and villas.

[5] According to a 1982 EPA survey, the average golf course uses about three times the amount of herbicides, fungicides, and insecticides that the most chemical-intensive agribusiness operation uses. (Selcraig, 1993)

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