

**STRUCTURAL DETERMINANTS OF GOLF
COURSE PROFIT: THE CASE OF GOLF
COURSES IN GEORGIA**

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ABSTRACT

The Ordinary Least Square estimation and survey data are employed to quantify the influence of golf course features and location on incremental gross margins. The analysis distinguishes among three golf course ownership types, private, semi-private, and public, to implicitly account for different motives behind their operation and ability to compete. Results show that the age of the facility, location, number of rounds played, and the size of course influence revenues and the gross margin as a result of additional spending on maintaining the playing surface. Differences among the ownership types exist in the magnitude of effects.

INTRODUCTION

Golf is a major recreational activity and a rapidly growing business in the United States today. According to the U.S. Census Bureau (2007a), between 1980 and 2004, the number of golf players increased by 63.2% from 15 million to 24,479 million, and the number of golf courses increased from 12,846 in 1990 to 15,489 in 2000, or 20.6%. The number of golf courses as reported by the National Golf Foundation (NGF) (2005) continues to increase and reached 16,057 in 2004.

Golf courses constitute a recreational use of land which offers an economically viable alternative to agricultural use. The Council for Agricultural Science and Technology (CAST) (2002) identifies turfgrass as a product of agriculture whose maintenance on golf courses also uses traditional agricultural inputs such as fertilizers, pesticides and other chemicals, irrigation water, and equipment. The demand for recreational facilities results from preference for leisure coupled with increasing income as suggested by Templeton et al. (2000). Crittenden (1995) notes that the golf industry understands that to remain competitive, a course must be well managed and marketed. Stephenson (2003) observes that with increased competition within the golf industry, it is important for golf course managers to identify factors which attract and retain their golfing clientele. Examining various aspects of golf course economics, Shmanske (1999) concludes that the demand for golf at a particular golf course is a function of the price, location, relevant population, and other characteristics including the level of maintenance of the golf course.

Golf course maintenance includes mowing, fertilizing and pest control in turfgrass, caring for trees and shrubbery, maintaining sand traps and equipment, among others. If maintenance is not undertaken daily, the condition of the course will suffer, risking the loss of clientele to other, presumably better maintained courses. Therefore, proper maintenance is expected to result in greater demand for golfing at a specific site. However, regular maintenance is associated with high expenditures, but the potential for profit remains if the marginal costs are less than the marginal revenues. All managers must deal with unavoidable issues of feasibility, which implies that a course generates sufficient cash to fund its operations, then earns and retains profits on an annual basis for growth and sustainability. Aterburn (1998) asserts that feasibility, profitability, and sustainability of operations constitute key indicators of business viability that apply to golf course facilities.

The objective of this study is to quantify the link between factors that have a potential to directly or indirectly affect golf course revenues because they directly or indirectly influence turf maintenance costs and golf course financial performance. The examination of the effects of selected factors on the measure of financial performance provides an indication of the importance of auxiliary services offered by a golfing facility to the revenue potential as well as the common golf course characteristics such as the number of holes. To provide additional insights, this study distinguishes among three ownership types of golf courses, i.e., private, semi-private, and public. The importance of this distinction is relevant because various golf course characteristics and factors that influence the management of a facility may differ in their response to ownership type. It is plausible that a private corporation operating a golf course attaches a different importance to revenue generation than a tax-supported entity responsible to a group of elected officials. In this regard, McElyea and Krekorian (2006) assert that private operation of a private golf course is often more efficient than public operation, and generates extra savings ranging from \$100,000 to \$250,000. Reports by the NGF (2002) suggest that core golfers (those playing an average of 37 rounds of golf per year with a minimum of 8 rounds) tend to choose among three publicly accessible courses and may choose facilities of different ownership. Furthermore, Marchand (2006) notes that competition for golfers has greatly intensified between the three types of ownership, with some municipal courses luring golfers away from privately owned courses. To test the ownership relevance, three separate equations were estimated using sub-samples of data that account for an ownership type. An alternative model is estimated applying pooled data and the binary variables describing the ownership type. The study is based on the data collected from superintendents and managers of golf facilities in Georgia.

The results from the study generate new knowledge about factors potentially responsible for the economic viability of a golfing facility. Specifically, superintendents and managers of golf courses gain insights about sector-wide performance and are able to review their operation's relative strengths and weaknesses. In the industry, the job performance of superintendents and managers is evaluated on the basis of the financial performance of each facility, yet the immediate interests of superintendents and managers are not identical. Superintendents are directly responsible for the course maintenance and struggle with the pressure to control maintenance costs, while assuring a high quality playing surface that influences the golfer loyalty. Managers are accountable for the performance of the whole enterprise, which may include other services besides golfing such as access to dining facilities or other types of recreation, e.g., a swimming pool. The relative role of various activities in creating additional costs and generating revenue helps

managers to allocate resources within the operated facility. Investors in real estate development gain knowledge useful in the calculation of expected returns prior to committing resources to invest in a golfing facility. The NGF (2005) reports that about one in five new golf courses is a part of a real estate development suggesting that development is an important part of many new facilities. How a real estate development is related to the economic performance of the whole facility is investigated in this study. Consultants and outreach personnel ascertain the contribution of various factors to the financial performance of the enterprise and are able to gauge their role in the process of improving the management of a facility. The importance of each factor affecting the marginal costs or revenues also helps to guide the research and outreach efforts. Finally, local governments, especially those investing in community golf courses, are able to better gauge the current and planned costs, while recognizing factors responsible for shaping the profitability. Public bodies considering a renovation, expansion, or construction of a golf course are able to compare the relative importance of different factors relevant for such undertakings.

THE CONCEPTUAL MODEL

The examination of the relationship between the golf course characteristics, including the ownership type, and a measure of financial performance is an empirical question that can be studied in the context of available data. A golfing facility's financial performance information is proprietary and not readily available. Data used in this study were collected through two surveys described in the next section. However, even the most thoroughly designed data gathering effort requires cooperation from management to share the relevant information and assumes that the desired data are easily obtained from the existing records and applied reporting system at each facility.

The role of ownership on the economic performance of an enterprise has been well established. Communal ownership has been observed to experience greater incidence of mismanagement leading to *X inefficiency*. Such ownership kept costs high, while the concealed measure of profits hid the extent of waste. In the case of public ownership of golf courses, Gustafson (1999) and Gustafson and McLean (2002) observe that in some communities, there has been pressure to privatize such facilities due to the need or desire to lower government expenditures and find new revenue sources. Many members of the community viewed privatization of public service provision as a way to promote the competition and risk-taking constrained by the public sector preoccupation with strictly defined responsibilities and procedures. The "invisible hand" guided numerous course construction projects because the primary motives of the investors were anticipated returns. Mothes (1998) indicates that farmers across the U.S. have attempted to convert their operations into golf courses in expectations of returns higher than for agricultural production. This study primarily contends that differences in the magnitude and direction of marginal effects of the various explanatory variables across the ownership groups have important implications on the use of available private versus public funds.

Although public golf courses dominated in Georgia in the past, the majority of newly constructed golf courses are private or semi-private facilities. The increased demand for the game of golf resulted from a rapid population growth and the heavy tourist traffic in the region. New housing construction includes a number of real

estate developments featuring golf courses, reflecting the preferences of many Georgians for a recreation-centered lifestyle. Nowadays, few municipalities can afford the construction of new golfing facilities as the influx of new residents puts pressure on the supply of other services ranging from fire protection to public schools. Across the country, city and state authorities lack funds to renovate existing public facilities and there is a heated debate between those who feel that state or local governments should not be involved in running a golf course and those who favor maintaining such facilities must reduce the effects of development on the quality of life as noted by Danner (2006) and Campanella (2006). If ownership type matters, the analysis will reveal few differences reflecting the motives of, for example, an entrepreneur constructing a private course versus a city commission committing public funds for building a public golf course.

Public golf courses operate in many cities and municipalities on a fee basis and are accessible to residents and nonresident alike. The NGF (1995) reported that of all golfers, membership was 11 percent in semi-private or municipal golf clubs, 12 percent in private clubs, and 44 percent in public golf courses. Private facilities may limit the players to a narrowly defined group, typically members and their guests.

This study focuses on a financial performance measure interpreted as gross margin since there is less agreement and uniformity in the classification and magnitude of some expense categories, e.g., land-related expenditures. Some courses are built on leased rather than purchased land, thus making a comparative cost analysis complicated and difficult. The current study implicitly assumes that the cost of land, capital, and several other fixed-cost categories would not differ among courses despite their ownership type. Gross margin measure is obtained by subtracting operating expenses, e.g., maintenance costs, from the reported revenues. The gross margin as a measure of business performance is widely used in agriculture and related fields. For example, Hook (2006) reports the use of the gross margin as a basis for price risk management in cattle production and ignores many fixed-cost categories. It appears that the proposed measure also applies to a golfing facility, especially given the limited data availability.

Revenues

Golf course revenues are the total golf facility revenues from all areas of operation. The sources of income include membership fees, membership dues, and golf green or guest fees and vary across ownership type. Additional revenues included in this study are generated by golf cart fees, golfing instruction fees (for lessons, clinics, and schools), tournament operations, golf range fees, and club rental services. Some golf courses obtain revenues for special services such as club repair, handicapping, caddies, golf bag storage, and locker fees. A study by Johnson (2003) shows that golf merchandise sales generate much needed revenues and that methods enhancing sales are closely studied by the golf industry. Property-wide food and beverage sales also supplement the facility's income. Factors influencing golf course revenues at a particular site include the number of rounds played, acreage, location, and the existence of other facilities such as a pro shop. According to Golf Business Magazine (2003), the number of rounds played is a major revenue driver, especially for semi-private and public facilities since they cannot expect large revenues from membership dues and fees. Some amenities, for example food and beverage service, are expected by players. Food and beverage sales generate \$3.4 billion annually at golf course facilities. This is the third largest revenue-generating service provided by golf course operators. Swimming pools, tennis courts, and gyms are less common

because they are supplemental amenities to the primary service which is the game of golf. On the other hand, Stephenson (2003) believes that private golf clubs are more likely than public-access facilities to have tennis courts (38 percent vs. 8 percent), swimming pools (50 percent vs. 9 percent), or fitness clubs (11 percent vs. 4 percent).

Maintenance costs

The difference between revenues and maintenance costs is the focus of this analysis. Revenue data were obtained from golf facility managers and maintenance expenditures were provided by superintendents participating in the survey. The data included labor costs and total costs of the following items: herbicides, fungicides, insecticides, growth regulators, lime and gypsum, wetting agents, fuel, oil, lubricants, equipment repair, irrigation repair, topsoil and sand top dressings, seed, sod, sprigs, trees, shrubs, bedding plants and ornamentals, water, other non-labor expenses, and renovation. Annual depreciation of equipment was also included in the total expenditures. The applied measure differed from the overall profits of every golf course facility, which are net of such expenses as interest and insurance.

The empirical model

The following model aimed at estimating the gross margin equation is applied:

$$Y = X\beta + \gamma \quad (1)$$

where X is a vector of independent variables used in the estimation of Y, β is the vector of coefficients, and ϵ is the error term such that $E[\gamma] = 0$ and $E[\gamma \gamma'] = \sigma^2$. Assuming that disturbances are uncorrelated across observations,

$$E[\gamma_{mt} \gamma_{ns}] = \sigma_{mn} \text{ if } t=s; 0 \text{ otherwise.} \quad (2)$$

The incremental maintenance costs, incremental revenues, and change in gross revenues are generated within each facility, but the relationships among these three measures are indirect. Both equations can, therefore, be estimated separately, using the Ordinary Least Squares (OLS) approach as developed by Greene (1993). The vector of independent variables includes those that directly and indirectly influence the difference between revenues and the maintenance costs, and their selection was based on knowledge of the industry supported by the available data.

DATA AND VARIABLE SPECIFICATION

Data

The data for the empirical analysis were obtained from a survey of superintendents and managers of private, public, and resort golf courses located in Georgia. Additional information was obtained from a survey of golf courses represented by members of the Georgia Golf Course Superintendent Association (GGCSA). A list of all golf courses that were members of the GGCSA included 352

addresses or 82 percent of all golf courses in Georgia, which numbered 430 in 1998. The survey was conducted in two stages using two different survey instruments. The first questionnaire was designed to obtain information from superintendents to gain insights about issues related to maintenance. Another questionnaire was prepared for the managers of these facilities to account for other sources of costs and revenues.

The general procedure of mailing the questionnaires for both surveys, i.e., superintendents and managers, followed Dillman (2000). The questionnaires were mailed to superintendents in the spring of 1999 and followed with the mailings to managers after the completion of the superintendent survey. Each mailing included the survey instrument and a cover letter from the survey organizers. Mailings to superintendents also included a letter from the GGCSA leadership supporting the research effort. Within ten days of the mailing, a post card was sent requesting the completion of the questionnaire. Subsequently, another copy of the questionnaire was mailed to those who did not respond to the first mailing or the reminder. The golf course's financial performance reflects the risk of the enterprise subject to market forces. Because the competition among golfing facilities was strong, the willingness to provide some type of information was tempered by the perception of its sensitivity.

The survey instrument probed superintendents for information about the size of turf area, total acreage, and maintenance expenses. Maintenance expenses included expenditures on fertilizers, pesticides, wetting agents and plant growth regulators, water, and irrigation system maintenance and repairs, among others. Managers were asked to share information about the financial performance of the facility including various revenue categories (e.g., membership fees, green and guest fees, golf cart rental fees, golfing instructions fees, merchandise sales, food and beverage sales). The number of returns differed between the superintendent and manager surveys.

From the total of 352 mailing addresses, 208 were returned by the superintendents and 149 by the managers. After accounting for duplicate addresses (1), courses that were out of business (2), wrong addresses (2), courses merged with another establishment (1), and misidentified establishments (13), returns rates were considered quite reasonable for a self-administered questionnaire of industry respondents. The return rates were 62.5 percent and 44.7 percent for superintendents and managers, respectively. High return rates were attributed to the geographical scope limiting the surveyed courses only to Georgia, implementation of the survey by a state institution, and support from the GGCSA, which encouraged members to respond to the survey.

Next, the data where both the superintendent and manager provided responses were merged into a single data set. The responses were merged according to the postal addresses and verified using information about the size of the course measured by the number of holes. The course size information was obtained from a control question included in both survey instruments. Respondents provided all information on a voluntary basis and it was assumed that the provided answers were true. Although some data could have been viewed as sensitive, it is likely that those who felt strongly about sharing any information also did not perceive the survey as important and did not return the questionnaire. Some returned only partially completed survey instruments. A total of 114 courses (or 32.4 percent of the 352 initially mailed questionnaires) provided the most complete information used in this study.

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Variable specification and selection

Table 1 shows the descriptive statistics of golf course characteristics and respondent characteristics. Four separate equations were specified, one for each ownership type and one for all golf course data pooled together. To estimate the equations, a number of explanatory variables was included based on the information shared by the surveyed golf courses. The variable choice was augmented by the observation of the golf course management practices to identify additional factors relevant to this study. All variables influencing maintenance expenditures and revenues are expected to affect revenues although the direction of the effect may be different from that on the gross margin or a priori unknown.

**TABLE 1
DESCRIPTIVE STATISTICS OF VARIABLES**

Variable	Unit	Mean	St. dev.	Min.	Max.
Golf course age	Years	34.8	26.0	3.00	110.
Metropolitan area	Yes=1; no=0	.447	-	0.00	1.00
9 Holes	Yes=1; no=0	.123	-	0.00	1.00
18 Holes	Yes=1; no=0	.789	-	0.00	1.00
27 Holes	Yes=1; no=0	.052	-	0.00	1.00
36 Holes	Yes=1; no=0	.026	-	0.00	1.00
45 Holes	Yes=1; no=0	.008	-	0.00	1.00
Area of turfgrass maintained	Acres	117.2	60.5	1.50	500.00
Area of the entire golf course facility	Acres	222.640	234.190	57.00	1,750.00
Area per hole	Acres	7.069	4.402	0.833	27.777
Manager's experience	Years	6.588	6.652	0.170	33.00
Manager education level	Years in school	15.47	1.81	11.00	21.00
Number of rounds played at the course	Actual number	28,1436.010	14,047.5498	4,000	82,000
Dining room	Yes=1; no=0	.482	-	0.00	1.00
Swimming pool	Yes=1; no=0	.464	-	0.00	1.00
Tennis club	Yes=1; no=0	.421	-	0.00	1.00
Facility is part of a development plan	Yes=1; no=0	.373	-	0.00	1.00
Gross margin	Dollars	2,382,841	1,423,514	339,925	25,955,000

Note: The mean indicates a share of golf courses with a specific characteristic in case of binary variables included in the sample.

The number of rounds played is especially important because it reflects the frequency of turf use and is positively associated with the frequency of turf injury and

damage. In addition, the total acreage of the golf facility is important because, as an integral part of a course, it also requires frequent care and maintenance, therefore negatively influencing the gross margin.

The age of a golf course serves as a proxy for “brand recognition.” Long-established courses are well-known in the area and may have been visited by more than a single generation of players in the same family. Some Georgia facilities constructed in the 19th century continue to operate, thus suggesting that the longevity has been earned by a consistent provision of satisfaction to golfers over time. The age of the golf facility is potentially influential in determining revenues because long-existing courses had adequate time to establish reputations among their clientele. The issue of whether or not a golf course is part of a real estate development has emerged with the increasing popularity of gated communities. A nicely designed course surrounded by upscale residences has tremendous potential to generate revenues. Although Asabere and Huffman (1996) and other studies have examined the link between a golf course presence and housing prices, the question of how a development affects course revenues is largely unanswered. However, as reported by the NGF (2005), real estate development continues to drive the construction of up to 60 percent of new courses. Some developments are limited to a few dozen homes, while some consist of hundreds of residences. Homeowners could potentially increase the number of rounds played, but if homes are part of a gated community, access to the course may be restricted. No a priori expectations are formed regarding the effect of the housing development in the immediate vicinity of the golf course. Other types of course branding may include state wide branding and signature courses. But this analysis uses the age of the course as a proxy of all aspects of brand recognition.

The effect of the location of the golf course is also considered. For this purpose, courses located in metropolitan and non-metropolitan areas were identified. The definition of a metropolitan area was consistent with that used by the U.S. Census Bureau. A metropolitan location implies denser population than in non-metropolitan areas, thus, creating increased demand for the game reflected in higher revenues and gross margins. In addition, according to the Sports Business Research Network (2003), golf participation rates in large metropolitan areas exceed those in non-metro areas. A metropolitan location was expected to positively influence both revenues and the gross margin.

Demand permitting, revenue is higher on a multiple course facility as Shmanske (1999) predicts. The survey data permitted grouping courses according to the number of holes. Golf course facilities with more than 18 holes will have larger total acreage and will also have a larger capacity than the standard 18-hole course. However, the classification of courses according to the number of holes may not reflect the link between the generated revenues and maintenance costs. Therefore, a single variable that combined the size and the number of holes was specified measuring the course area per hole. It was obtained by dividing the area of the turfgrass by the number of holes. Although it is logical to expect an increase in the earning potential as the number of holes on the course increases, the actual direction of the effect on the gross margin by the specified variable will be determined empirically.

The acreage of maintained turfgrass is expected to negatively influence the gross margin. Although it takes longer to mow grass on larger greens, thus raising costs, the main effect of a large green is to spread wear and tear caused by the game. A study by Shmanske (1999) revealed that it was a unanimous view of golf course

superintendents that large greens are easier and cheaper to maintain than small greens. This is because the game of golf eventually ends on greens where about 80 percent of the activity concentrates.

The number of rounds played is a source of revenue generated by fees. The coefficient associated with the variable accounting for the number of rounds played is an estimate of the marginal cost that an additional golfer imposes on the course. Therefore, the number of rounds likely increases the revenue, but its effect on the gross margin is not clear. Moreover, the effect may be confounded by the type of course ownership unless it is assumed that the skill level of golfers does not vary across facilities that are private, semi-private, or public.

The total acreage of the golf facility is expected to be positively related to revenues because a larger facility tends to offer a wider range of services, more choices in terms of structuring the game, and other amenities which attract the playing public. However, caring for a larger number of acres is more expensive than caring for fewer acres and consequently, raising total acreage may negatively influence the gross margin.

The presence of amenities such as tennis courts, swimming pools, and food and beverage services are expected to enhance revenues, because such additional facilities attract a broader spectrum of customers including non-golfing family members of golfers themselves. Some players may deliberately choose a course because of the presence of amenities, which permit the whole family to enjoy an outing. However, the effect of the presence of amenities on the gross margin is uncertain and is determined empirically.

The last set of factors relevant in determining the gross margins as defined in this study is the human factor. The manager's educational attainment can influence both revenues and the gross margin. Managers with a high educational attainment level can be expected to be more efficient and innovative than those with less education in using available resources to improve the gross margin, while exploiting opportunities to generate revenues. Another important measure is experience, which reflects informal education of a survey respondent. The manager's experience, i.e., the number of years working in the golf industry, is expected to positively influence the gross margin. Experience can be a source of improved management through enhanced organization, planning, and innovation.

RESULTS

Table 2 shows estimation results of the gross margin equations recognizing that the differences in the ownership justify separate modeling. A single equation model of gross margin, where ownership type is measured as factor shifting the function was estimated using pooled data and Table 3 presents its estimation results. Overall, the specified equations appear to have captured the factors influencing the gross margin more accurately for the private and semi-private courses than for the public courses, although the number of degrees of freedom was the lowest for the semi-private courses. The variation in the explanatory power of each equation according to the ownership type was expected and is particularly noticeable in the gross margin for public golf courses.

The age of golf courses appears to positively affect the gross margin. As private and semi-private golf courses age, the revenue and gross margin they can

expect to earn increase substantially. This result is consistent with expectations that older golf courses have established a reputation through sustained satisfaction provided over decades to generations of clients. The insignificant, but negative effect of the golf course age in the case of public courses suggests that these courses may suffer from inadequate upkeep including renovation to retain and expand its clientele. It is plausible that as the condition of a public course deteriorates, its ability to increase fees weakens and negatively affects the gross margin.

TABLE 2
ESTIMATION RESULTS OF THE GOLF COURSE GROSS
MARGIN MEASURE BY OWNERSHIP CATEGORY

Variables	Coefficient estimates by type of golf course ownership		
	Private courses	Semi-private courses	Public courses
Constant	-918210.483 (-1.352)	-2285047.348 (-1.596)	994392.415 (.389)
Golf course age	24489.786*** (3.629)	65241.780** (3.091)	-22666.877 (-.892)
Metropolitan	1283703.179** (2.945)	-863876.979 (-1.226)	1077888.759 (.943)
Rounds	-34.454* (-2.311)	54.900* (2.025)	46.659 (1.602)
Area per hole	-26844.368*** (-5.037)	150.109 (.024)	-2719.609 (-.131)
Turf-grass size	32166.879*** (5.392)	-904.101 (-.183)	9161.257 (.482)
Facility size	-6856.473*** (-3.650)	2065.157 (1.022)	-5826.748*** (-3.701)
Manager's experience	2065.240** (2.677)	1618.673 (.849)	-21160.613 (-.271)
Manager education	743090.002* (1.811)	1952951.878* (2.537)	-516445.103 (-.387)
Dining room	-768662.4280 (-1.296)	669166.715 (.628)	1067850.807 (.797)
Swimming pool	-204213.919 (-.201)	-2226637.419* (-1.817)	-1053006.397 (-.502)
Tennis club	406888.410 (.366)	585641.865 (.494)	-554543.893 (-.241)
Development plan	-528.707 (-.578)	-187760.649 (-2.49)	22418.935 (.2841)
R ²	.563	.621	.421
Number of observations	48	27	39

*, **, and *** indicate significance at 10%, 5%, and 1%, respectively. Numbers in parentheses are t-statistics.

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TABLE 3
ESTIMATION RESULTS OF THE GROSS MARGIN
MEASURE USING POOLED DATA

Variable	Units	Coefficient estimate	t-statistic
Constant	-	-499214.035	.527
Golf course age	Years	18632.570*	1.934
Metropolitan area	Yes = 1, No = 0	510608.940	1.005
Rounds	Number of rounds played	28.868*	1.872
Area per hole	Acres per hole #	-5301.478	-.993
Turf grass size	Number of acres	10261*	2.092
Facility size	Number of acres	-4394.845***	-4.201
Manager experience	Number of years	176.376	.884
Manager's level of education	Years in school	232364.859	.489
Dinning room	Yes = 1, No = 0	1148413.038*	1.792
Swimming pool	Yes = 1, No = 0	-381966.060	-.400
Tennis club	Yes = 1, No = 0	-92241.013	.093
Development plan	Yes = 1, No = 0	630.907	.443
Semi-private course	Yes = 1, No = 0	-220188.771	-.425
Private course	Yes = 1, No = 0	-752793.006	-1.158
R ²		.259	

*, **, and *** indicate significance at 10%, 5%, and 1%, respectively. Numbers in parentheses are t-statistics.

The location of a facility in a metropolitan area appears to have significant and positive effects on the gross margin of private golf courses. A metropolitan area is densely populated and a course located there meets expectations of convenient access. Members of private golf clubs bring their own guests, often customers, to the club and include the cost in their business expenses. The gross margin of a private golf course can be expected to increase by \$1.28 million if it is located within a metropolitan area as compared to a non-metro location. Some Georgia metropolitan counties have experienced a rapid growth in recent years and the public amenities, including public golf courses, may have not been developed at a similar pace leading to the insignificant location effect on gross margin in this ownership category.

The number of rounds played at a golf course is indicating the potential maintenance costs, but also increasing the revenues. Rounds played at a golf course negatively influence the gross margins of private courses (Table 2). Private golfing facilities operate for profit but the character of the golf club limits the number of players. Given the result, however, each played round increases maintenance costs on private courses and the additional revenues do not offset the added cost. In the case of semi-private courses, the coefficient is statistically significant and positive implying that such courses benefit from additional rounds played. It appears, therefore, that access to a course is essential and the number of rounds played has an important influence on gross margin. The effect of the number of rounds played has a similar effect (though marginally insignificant) on the gross margin of public courses.

The area per hole negatively and significantly affects gross margin of private courses (Table 2). This result was expected because the larger the area of turfgrass per hole, the larger the maintenance costs. In the cases of the semi-private and public golf courses, the effect was not statistically significant. The semi-private courses,

which are interested in generating revenues from fees paid per round, have an incentive to limit the area that has to be maintained which is not a part of the course itself. The area of public golf courses is limited to that necessary for conducting the game because of the public nature of the funding source.

The size of turfgrass areas shows a positive and significant association with gross margin for private courses and supported the findings reported by Shamanske (1999) that large greens were easier and cheaper to maintain than small greens. The insignificance of the coefficient of this variable in the other two ownership types indirectly suggests that the private courses seem to be particularly conscious of maintenance costs.

The total acreage of the golf facility shows negative and significant influence on the gross margin of private and public courses (Table 2). This result was unexpected because large facilities may offer choices in the configuration of the game, more diversified playing fields, and amenities which attract the playing public. However, the result seems to indicate that caring for additional acreage generates more expenses than revenues. This result holds true for the two ownership types that are not necessarily motivated by profit-maximizing motives. In case of the semi-private facilities, the effect was statistically insignificant.

Two characteristics of a golf course manager were viewed relevant in the investigation of factors influencing the gross margin. The manager's level of education exerts a positive and significant influence as expected, but only on private and semi-private courses. A manager with more education would be more efficient and innovative in using available resources than a manager with less education to improve the financial performance either by cost reduction or revenue enhancement. The level of education did not matter in the case of public golf courses and probably results from the inability of public courses to attract a well-educated manager. The funding of the manager's salary from public funds may place limits on the salary level, but the uncompetitive pay reduced the ability of public golf courses to improve their gross margins.

The effect of the informal education reflects in the experience the manager has in working in the industry positively influenced the gross margins at private golf courses. It appears that in situations where the efficient use of resources was essential due to the limited number of revenue sources (e.g., the number of rounds played), the experience mattered. The absence of a statistically significant relationship between the manager's length of experience and the gross margin for public courses suggests that managers perform tasks with limited influence on gross margin. This is a plausible outcome because publicly-owned courses are governed by a specific set of rules. The results for semi-private courses, although positive, are statistically insignificant.

Among several variables accounting for various amenities of golf courses, only one has a significant influence on the gross margin. In the case of semi-private courses, the statistically significant effect on gross margin is associated with the presence of a swimming pool. However, the effect is negative and causes a decrease in gross margin. The primary role of a golf course is the game, not the use of a swimming pool or a tennis court. To change the direction of the effect, the golfing public may have to be informed about alternative recreational opportunities. Having a swimming pool generates expenses regardless of the number of people using it, so an action encouraging the pool use may generate at least some revenues to offset the occurring expenses.

IMPLICATIONS

The steady increase in the number of golf courses in Georgia has not been matched by the extent of applied research focusing on golf course operation and financial management. This study examines factors influencing the financial performance of golf courses measured by their gross margin.

The size of the golf courses (in terms of the number of holes) tends to increase over time in Georgia. But this study supports that private courses with a larger turfgrass area per hole could expect to generate lower flow gross margins. The substantial population growth in Georgia generates increased demand for the game, but at the same time, local and state governments are under pressure to invest in basic infrastructure requirements of the local communities including roads and schools. Even among alternative recreational facilities, golf falls behind more popular forms of recreation.

A metropolitan location for a private golf course appears to be preferred to a non-metro site. Because a golf course requires a large number of players to generate revenues, densely populated urban and suburban neighborhoods are more likely to support a facility by generating an intense flow of traffic. Remote golf courses must offer special incentives to attract players. Among semi-private courses, some are associated with resorts and are intended for a weekend or longer stay. Golfers visit such sites to enjoy the game, but also to rest in the different environment than that offered by courses near their permanent residence. However, as reported by (*Indy developers convert farm into links*, 1998a; Mothes, 1998), some of the new golf courses are being located farther away from a major urban area, for example, an hour drive away from a major city, as the retiring farmers seek alternative uses for land. Such facilities may face a problem in attracting golfers on a sustained basis and the metropolitan location begins to matter in comparison to a non-metropolitan site.

The trade-off exists between the size of the whole facility and the size of the turfgrass constituting the playing field. The gross margin improves in response to an increase of turfgrass area, but worsens if the area dedicated to the game does not expand. Because the whole area requires some kind of maintenance, limiting the acreage that is not a playing area will enhance the gross margin. The design of some facilities may underscore the appearance of the whole facility as a way of attracting customers. However, from the purely financial standpoint this may be less desirable.

According to Harack (2003), only about 15 percent of golf courses nationwide are profitable. In the absence of applied studies that can verify the relevance of specific aspects of the golf enterprise, managers and superintendents cannot be offered guidelines regarding factors responsible for the industry total revenues or gross margins. Such studies would provide the necessary benchmark for comparison with a specific operation. Instead, managers and superintendents must depend on their experience and their own analysis in the evaluation of enterprise performance. The positive influence of manager's experience on gross margins on private courses may be difficult to duplicate on golfing facilities of different ownership type. The public courses may have a difficult to compete with the salary level that a public body is able and willing to support, while some semi-private courses lease the facility to golf course management companies to transfer the day-to-day operations (*Professional management coming to the fore*, 1998b).

Table 3 shows estimation results of a single equation using pooled data, where the binary variable indicated the ownership type. The overall goodness-of-fit measure is smaller than when estimating each equation separately. Moreover, the binary variables accounting for the ownership type are insignificant statistically. There are differences in the statistical significance and the direction of effects of individual variables in comparison to the results shown in Table 2. The age of a course positively influenced the gross margin suggesting the importance of longevity in building a reputable business image. The number of played rounds also had a positive influence on the dependent variable suggesting that a facility benefits from the highest possible frequency of playing the game, i.e., earning revenues from each round. The turfgrass area had a positive affect on gross margin. Large turfgrass areas allowed for a variation in the game and likely reduced boredom that may be caused by a small turfgrass area. Golfers playing often tend to play at more than one location, in part, because they seek a challenge in the game. A larger course is more likely to provide such a challenge. However, the increasing size of the whole facility led to a decrease in gross margin. This result was expected because any acreage has to be cared for, but only the course is directly tied to the revenue-generation process. Among amenities available at a golf course facility, access to a dining room had a positive influence on gross margin. The survey of golf course managers indicated that in facilities which offered food service, revenues from the dining room were relatively important and were the most frequently offered service at golfing facilities across the three ownership types.

CONCLUDING COMMENTS

Results suggest that the relative importance of golfing facility characteristics and the characteristics of their managers differs across the three types of ownership considered in this study. The selected explanatory variables appeared to be relevant in their influence on gross margins at private and semi-private courses. Although the overall goodness-of-fit measure in the equation modeling gross margin at public golf courses was relatively high, only one coefficient was statistically significant. Because the chosen course characteristics are those that influence the revenues or expenses, it seems that factors omitted from the specification explain the gross margin on public courses. It is plausible that the way in which a public facility is financed is subject to different rules applicable to public institutions, but not used in operating private or semi-private courses. Consequently, it may be very difficult to compare the performance of a golfing facility across ownership type although the size of a facility or the number of played rounds can be similar.

Among factors that influenced gross margin, the age of a facility seems to be quite relevant and positively influencing the gross margin. If this variable is a proxy for the reputation a course developed over time, efforts to provide consistent, high-quality service are important. But to maintain high-quality playing surfaces requires intensive course management including application of inputs, mowing, and other turf care tasks, which increase expenses. Managers' experience may be important in the process as it was shown to have a positive effect on gross margin. Limiting the size of the facility may enhance gross margin according to the estimation results. Indeed, a large facility represents a cost and a relatively large portion of the total area is not the playing surface, adding to the maintenance while not generating revenues.

Amenities offered by a golfing facility did not improve the gross margin. This is an important result for those investing in the construction of new facilities.

Moreover, the presence of the development had no effect on gross margin, while it seems that some of the amenities tend to be located at golfing facilities associated with a development. It is possible that a different measure of the development, for example, the number of homes along the front of a course, could improve the results, but such data is very difficult to obtain.

Location in a metropolitan area mattered to private courses although it is expected that a course of any ownership type can expect more (presumably paying) customers in a densely populated area. For golfers, the distance traveled to a course is one of the factors they use to select a course, so the population density within a radius of several miles from a course is an influential factor. Future efforts in data collection may address this issue and revisit the effect of location on gross margin.

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