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Technical Report 4

Some Characteristics of Golf Courses in the United States, 1997

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Executive Summary

The underlying economic fundamentals of golf are, at best, not well understood. This technical document attempts to shed some light on golf and golf courses in the United States. To our knowledge it is the first complete scientific study of the characteristics of golf courses, their attributes, and decomposition of the value of each component. The analysis uses the GOLF MAGAZINE Golf Course Guide that contains over 100 variables on more than 17,000 courses in the United States and Canada for the years 1995 through 1997.

The study is broken into five chapters. Chapter 1 is an overview of the report. Chapter 2 reports over sixty pages of golf course statistics including numerous figures and tables. Chapter 3 is a literature review summarizing and explaining the economic science on hedonic pricing and reports how certain hedonic methods can be applied to the analysis of golf courses. Other influential work in sports economics and the golf industry are briefly reviewed to show the power and breadth of economics as applied to sports. Chapter 4 develops the economic model. It reports the first ever estimates of quality-adjusted demand and supply equations following suggestions in the economics and academic literature. This study is the first to estimate demand and supply price elasticities for golf. Chapter 5 summarizes the reports and provides some concluding remarks.

Hedonic estimation is a theoretical concept in economics that has heretofore been used to gauge the dollar value of product attributes in homes, automobiles, and similar consumer products. In the classical analysis, hedonic models determine the value of an individual product characteristic, such as a swimming pool, when attached to a home, holding all other attributes constant. The Kelley Blue Book exemplifies the technique. For instance, take the trade-in value of a 1999 Chevy Suburban. The used car is worth \$385 more if it has leather upholstery, and this takes account of mileage, location, engine size and so forth. Indeed each product characteristic has a dollar value assigned. What we have done is create dollar prices for each golf course characteristic, including but not limited to: course markers, caddies, hazards, restaurant and bar amenities, course designer or architect, rating, slope, length, and the like.

For instance, we estimate that golfers pay \$3.28 more in greens fees for courses serving beer and wine and \$7.30 more for courses with a full bar relative to courses that serve no alcohol. Golfers pay over \$23 more for courses with caddies services. Similarly we estimate that requiring soft spikes adds approximately \$2.00 to the greens fee as compared to courses that allow metal spikes. These hedonic values are national estimates and vary by state and region. We can estimate these values on a more micro scale. We have also performed this analysis for every golf course architect in our database who has designed three or more courses in the past 100 years. Golf course developers might find this list useful when choosing among designers. This information is available in another of our technical reports.

Above and beyond the hedonic/characteristic value analysis, we simultaneously estimate hedonic demand and supply equations for golf. We are the first to do this for any industry much less golf. Our models show that there is strong statistical evidence that the First Law of Demand holds for golf. This means that holding other variables the same, as the price to golf increases the number of rounds golfers play decreases. Other statistically significant variables that positively influence the demand for golf are: a bar,

caddies, professional on site, local per capita income, local population, and tourism. Some statistically significant variables that negatively influence the demand for golf are: allowing metal spikes and average rainfall. For the supply side of golf, the following statistically significant variables increase the costs of supplying golf: courses with homes, caddies, a bar, a professional on site, being a resort course, average rainfall, the number of courses in the surrounding county, and the cost of area labor.

Our economic model also estimates the price elasticity of demand for golf. To our knowledge we are the first to estimate the price sensitivity of golf. This measures how responsive golfers are to greens fees, and enables course managers to properly price their product. We estimate that the demand for golf is actually quite elastic. This means that golfers are quite price sensitive. We estimate that a 5 percent increase in average greens fees would lead to a 9 percent reduction in rounds played. Here we report the national average price responsiveness, adjusting for a wide variety of course features and accounting for competition in the area, but we can also narrow this estimation to a region, state, county, or even a course for more precise pricing and revenue management.

This report also includes over 50 pages of golf course statistics represented in maps, tables, and time series formats. For example, the data reveal that the rounds played per month are greatest in the northern states. This means that when the courses are open in the northern latitudes golfers take advantage of their golfing opportunities. The greatest number of total annual rounds played occur in the western states along with Missouri. The mid northern portion of the country has the greatest number of courses per capita along with South Carolina as a southern outlier.

The report also reveals information concerning the growth of golf courses. We find that there is a strong correlation between golf course growth and economic growth. However, golf course openings lag economic growth. We also find a strong correlation between population and golf course growth. These two variables trend together during the twentieth century but over the last decade the growth of courses has significantly outpaced population. The number of courses opening per year has been on an upward trend since the mid 1980s. Another significant period of golf course openings occurred from 1960 to the mid 1970s. This period saw numerous years with over 400 course openings. This period experienced much more volatility in the number of courses opening per year than our more recent steady upward trend.

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