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ABSTRACT

In the various fields of creative, cultural, and artistic production, there exists a competitive struggle amongst creators of innovative works or ideas to persuade agents in the field to accept and value the new work. This is a significant challenge since cultural innovators do not produce in response to existing demand, but must create new demand for what they are supplying (Bourdieu (1996)). A common polemical tactic is to demarcate the new style from existing predominant ones by appealing to and extolling the virtues of a still earlier style that is maintained to have classic historical status, and thus lacking the corruption or excess of the prevailing style. The proposed innovation is purported, by the creators themselves or the critics who champion them, to renew the classic principles of the historic style, and in their polemic the new breed of creators attempt to persuade the field to revaluate the historic style, and thus by affinity the new style, to the detriment of the prevailing style, which must be devalued. Current evaluative judgements of the relative merits of past and existing styles are thus revised, in favour of the former. This evolution in retrospective judgement of styles can in principle be measured. In the field of golf course architecture, the stylistic revolution unleashed in the early 1990's was accompanied by the new architects and their critics extolling the pre-war "Golden Age" of architecture to the detriment of what they called the "Dark Ages" of post-war architecture. We measure the effect of this polemic on the field's overall judgment through an empirical analysis of 30 years of widely read and discussed biannual rankings of the 100 Greatest Courses in the United States as assembled and published by the major magazines *Golf Digest* and *Golf Magazine*, and find significant evidence that the rankings evolved during this period in favour of pre-war courses as opposed to post-war courses built before 1990.

Keywords: economics of golf, economics of the arts, endogenous preferences, Bourdieusian distinction

JEL: Z11, Z20

1. INTRODUCTION

"In golf construction art and utility meet; both are absolutely vital; one is utterly ruined without the other." - George C. Thomas, *Golf Architecture in America*, 1927[1]

In the cinematic comedy masterpiece *Caddyshack* (H. Ramis, 1980), set at a golf club, assistant greenkeeper Carl Spackler (Bill Murray) is charged with disposing of a gopher whose burrowing activities are damaging the playing surface of the golf course. Spackler's various inept attempts to eliminate the gopher, in the course of which he utters the immortal line, "In the words of Jean-Paul Sartre: *Au revoir, gophère*," culminate with the detonation of explosives placed in the gopher burrows that leaves the gopher himself no worse for the wear, but effectively destroys the landscaped surface of the property, so that it looks more like a pockmarked World War I battlefield than a golf course. Spackler's *au revoir* should have been addressed to the golf course itself.

Life would imitate art twenty years later when Rolling Hills Golf Club, in Davie, Florida, where *Caddyshack* was filmed, would intentionally destroy its own golf course and build a new course on the same property. The new course, designed by architect[2] Raymond Floyd, bears no resemblance to the original course, designed in 1961 by architect William Mitchell (1912-1974), situated on the same property and belonging to the same club (Cornish and Whitten (1993)). The previous course was effectively erased, but unlike pop artist Robert Rauschenberg, who famously erased a drawing by the abstract expressionist painter Willem de Kooning and then exhibited the sheet without superimposing a new drawing, Floyd substituted a new design of his own on the property from which Mitchell's design had been eliminated. The design change was part of an effort by the club to become more fashionable, with the chic new architecture accompanied by a new name for the club, which now calls itself Grande Oaks.

The *Rules of Golf* provide almost complete liberty as to the configuration of a golf course, the only limitation being on the size of the cylindrical cavity in the earth called the "hole", which, according the "Definitions" Annex to the *Rules*, "must be 4 ¼ inches (108mm) in diameter and at least 4 inches (101.6mm) deep" (United States Golf Association (2021)). All other aspects of the design of a golf course, such as its size, length, physical features, hazards, vegetation, grass strains used, etc. are entirely at the discretion of the club that owns it, and so the variety of different golf courses that exist is enormous, the experience of which provides one of the

[1] See Thomas (2020, p. 93).

[2] We use the words "architect" or "architecture", when unmodified, to refer to a golf course architect or golf course architecture, i.e. a person who designs golf courses or the practice of designing golf courses. When referring to the design of buildings or of non-golf landscapes such as parks or gardens, we will use the expressions "building architect(ure)" and "landscape architect(ure)" respectively.

greatest delights for the golfer, entirely analogous to the satisfaction accorded to a lover of paintings from seeing a variety of different art works.

Indeed, a great golf course is no less a work of art than a Renaissance fresco or a Baroque palazzo.

The principal task of designing a golf course belongs to the professional golf course architect, and the creativity shown by the architect in using a given parcel of land to create a course which will provide the greatest and most varied playing challenge and interest for skilled players, while being enjoyable for less skilled players and aesthetically pleasing to all eyes, is essential to the success of a golf course. Golfers will tend to return to the golf courses that they most enjoy, and for those interested enough to join a club, the quality of the course is usually a major factor in choice of club.

It is natural for those golfers who have played a number of different courses to discuss and compare them, and to make travel and vacation plans based on the locations of courses they are most interested in playing in the future. Given that there are tens of thousands of golf courses in the world, the avid golfing connoisseur finds interest, entertainment, and guidance in reading criticism, ratings, and rankings of golf courses. Many magazines, books, and websites exists that are devoted wholly or partially to this purpose, and so a body of golf architectural criticism exists that is similar in many ways to analogous critical infrastructures for restaurants, movies, and performing and visual arts. This branch of the large literature about golf is well over a century old, going back at least as far as *The Golf Courses of the British Isles*, originally published in 1910 by the great Bernard Darwin, in which dozens of the finest golf courses of the British Isles are listed and provided with descriptive and critical essays (Darwin (1988)).

Golf courses were already in existence before the invention of such art forms as oil painting and opera (golf was so popular by 1457 that an Act of the Scottish Parliament that year outlawed it), and the history of golf course design is thus of great interest to many golfers. The modern history of golf course architecture and written criticism, which we describe in greater detail in Section 2, can be traced to the latter part of the nineteenth century, and the sequence of stylistic evolutions, with associated critical and polemical debates, that have characterized this history are similar in many ways to those in other art forms, such as described by Bourdieu (1993, 1996), for example, for modern poetry and painting.

The story of the evolution of golf course design is similar to that of other sectors of the creative industries (Caves (2000)) in that the market constantly demands new products characterized by formal and substantive originality. The problem for producers and consumers alike is that although there may exist market demand for the generalized quality of “originality” (in addition to such attributes as beauty, practical functionality, or for golf courses, sporting interest),

almost by definition no one can say exactly what this implies practically. There ensues a competition among creative producers to persuade the market that the product they are offering is indeed the truly original thing, and the process by which this competition occurs, and winners and losers are determined, is a complex one that has been analyzed by, for example, Bourdieu (1993, 1996) and Fry (1998). Bourdieu (1996) describes the problem facing creators as that of trying to incite a demand, non-existent *a priori,* for what they are supplying. As creative products are by their nature cultural markers of identity for their consumers (Veblen (2007), Bourdieu (1984)), the problem facing the creator is to persuade the public that their particular contribution provides important and original cultural and symbolic value.

The largely symbolic aspect of the competition amongst creative industry producers to attract the market's attention often implies the mobilization of a polemical or theoretical apparatus in the attempt to justify and explain to the public the originality and importance of the particular contribution being proposed. The means by which these objectives are addressed, typically through the formation of movements and the attendant publication of texts such as manifestos by the creators themselves or sympathetic critics, will be discussed in Section 3, but it is well established in many fields and over a very long historical time frame that the appeal to a historical style that existed prior to the current predominant style is a common expedient adopted by entrants to a creative field in the attempt to carve a niche for themselves in the face of current established practitioners. This phenomenon is referred to by Friedlander (1965), in the context of a study of sixteenth- and seventeenth-century Italian painters, as the "grandfather effect".

This grandfather effect is discussed in some detail by Bourdieu (1993, 1996), in the context of avant-garde modern poets and painters, where an entrant to a field in which originality is highly valued seeks to somehow distinguish his or her contribution from currently prevailing advanced styles. This is typically attempted through the adoption of an adversarial relationship with regard to the dominant style (see also Poggioli (1969)), in which problems or shortcomings in this style are emphasized. The proposed new style is thus accompanied with a written or verbal polemic which describes the ways in which it will overcome these shortcomings. This typically involves the appeal to an earlier "Golden Age" in the history of the field, in which heroic creations of classic greatness were produced, before the field declined to its current corrupt and degenerate state. The new entrant maintains that their work will refresh the field by a return to the classic principles of yesteryear, and similarities between the new work and the Golden Age are highlighted.

This polemic therefore involves a retrospective revaluation of the relative merits of the currently dominant style, as opposed to the Golden Age. The artists of the Golden Age generation are celebrated, "rediscovered", and revived, and more recent artists are diminished. If the polemical effort of the new artist or movement is successful, and the public convinced of the validity of its argument, then the effect will be a revision of the field's critical evaluations of its own past, with

the reputations of the Golden Age artists being elevated at the expense of those of more recent artists. This process, we maintain, characterizes very well the recent history of golf course architecture, where a movement of young architects, led by the architect/critic Tom Doak, mounted in the early 1990's a polemical campaign intended to revive and extoll the architects mostly practicing before 1940, to the detriment of the modern, post-war, school of architects, led by the American architect Robert Trent Jones. The objective of these young architects was to modify the values of the golfing community as to what set of characteristics typified a good golf course, arguing that these characteristics, which they were proposing to incorporate into their own architecture, had been present in the Golden Age but jettisoned by the debased architectural styles of the post-war era.

As mentioned above, there is a large literature judging and ranking the quality of golf courses, which often takes the form of "Best of" lists, published by magazines or on websites, ranking the top courses in particular geographic zones, such as states, provinces, countries, etc. One of the longest-running and prestigious of these is the United States Top 100 list compiled by the American monthly magazine *Golf Digest* (www.golfdigest.com), that is updated every two years since 1966, with biannual rankings also published by the competing monthly *Golf Magazine*. These rankings can be taken to represent a consensus of experts in the golf architecture field as to what qualities constitute a great golf course, and if the effects of the contemporary young architects to effect a general retrospective revaluation of different historical styles have been successful, then we should observe systematic trends change in the magazine rankings after 1990. In particular, we would expect to observe a relative increase in the rankings of courses designed by Golden Age architects as opposed to those built by the immediate post-war modern school. We do, in fact, find statistically significant evolution of both the *Golf Digest* and *Golf Magazine* rankings after 1990 in accordance with this hypothesis.

Although the specific phenomenon we are studying here has been noted to be present in other creative fields, and may indeed be present in all of them in some form, the availability of magazine rankings to track changes in critical judgement of golf architecture represents a unique opportunity to empirically study the phenomenon that may not be present in other fields. Although much critical discourse and expressions of judgment of quality obviously exist in other fields, the ready availability of measures that can be used in a rigorous statistical investigation seems to be absent or not so easily available as are golf course rankings. We thus consider that our study may be of general interest to researchers interested in the mechanics of innovation in all creative fields. Our data set and econometric methodology are described in Section 4, and the empirical results presented in Section 5.

2. HISTORIC TRENDS IN GOLF COURSE ARCHITECTURE AND CRITICISM

To follow a discussion of the qualities that might make a golfer think that one golf course is better than another, it is important to understand certain fundamental aspects of the sport, so we provide a brief introduction for the reader unfamiliar with golf. The objective of golf is to strike a ball with implements called clubs such that it is advanced from a defined starting point, the tee, to a defined target, the hole, defined in the Introduction, and into which the ball must be made to fall, all this in the fewest number of strikes of the ball, called strokes, as possible. Golf is an outdoor sport and the parcel of land from the tee to the hole is also called a "hole", with a typical golf course having 18 holes and occupying approximately 150 acres of real estate (although as mentioned in the Introduction, the *Rules of Golf* are silent as to the configuration of a golf course, and many fine courses have more or less than 18 holes, and cover larger or smaller acreages).

A large component of the centuries-old popularity of golf lies in the attractions of the golf course itself, both in terms of the playing challenge and interest it provides, as well as in the pleasure of the natural environment as enhanced by certain artificial landscape features as designed by an architect. The challenge of golf lies largely in the variety of different types of shot the player is called upon to execute, from long power shots to short finesse ones, high or low trajectory shots, shots that curve to the left or to the right, very short rolling shots aimed at the hole, called putts, that are played on a closely mowed surface called the putting green, as well as various kinds of recovery shots from deep grass, trees, sand hazards, etc. A good golf course provides a varied and significant challenge in terms of the different types and difficulty of shot that are required, without being so easy as to be boring or so difficult as to be punishingly frustrating. In the jargon of psychology, a good course is thus one that induces in the player a state of "flow", of pleasantly engaging challenge (Csikszentmihalyi (1990)).

The criteria provided by *Golf Digest* to its panelists for the rankings to be used in this study are provided in the Appendix, where we see that only the first four of the eight criteria concern aspects of playing challenge as described in the previous paragraph. The remaining criteria concern aesthetics and general enjoyability, in other words the ways in which the artistry and creativity of the architect has gone beyond mere criteria of physical execution of the sport to make of the golf course a pleasant and enjoyable environment, conducive to human comfort and aesthetic appreciation. A great golf course provides all these elements, and all are appreciated jointly by an experienced golfer, to the point that for a golf hole to look truly "beautiful" to a golfer as he or she stands on the tee, it must combine visual beauty in terms of the shapes, colours, and construction of the physical features, including how they relate to the surrounding environment, as well as presenting to the intellect of the player an idea of the possible strategies and shot types that may be useful to the successful completion of the hole in the lowest number of strokes.

As with any art form, judgments of relative quality in golf course architecture are personal and no two individuals, even top experts, will have identical preferences or criteria of judgment. Nevertheless, there does exist at any point in time a consensus as to which qualities make for an excellent golf course, as to which courses would belong on a list of the very best in a particular geographic area, and as to the identities of best architects, whether historical or presently active. This consensus is of great economic importance because it largely determines which active architects will receive the most and best commissions to build new courses or restore or renovate existing ones, and will play a role in the economic success of existing courses designed by no historical architects. One important way in which the current consensus of expert opinion is summarized is through golf course rankings, and there are many rankings lists that are regularly published by magazines and websites in many countries. The expert consensus can change over time, both as regards the relative judgments of individual golf courses or architects, and as to the general criteria that make for a great golf course. We will attempt to measure a specific aspect of revisions of expert judgment as reflected in the evolution over time of a particular and highly-publicized magazine rankings list, the biannual Top 100 Courses in the Unites States as compiled and published by *Golf Digest.* Although a significant literature exists in the economics of golf, and of golf courses specifically (for example, Do and Grudnitski (1995), Mulligan (2001), Pope and Schweitzer (2011), Shmanske (1999, 2004a, 2004b, 2015)), we are not aware of existing research in economics that studies golf course architecture or uses data sets on course rankings.

As golf first evolved in the naturally undulating and sandy seaside areas of Scotland known as linksland, the basic challenge and aesthetic of the sport were adapted to such a type of landscape, and so it would seem to follow naturally that the golf courses constructed elsewhere that best mimicked the Scottish design style would be the most pleasing to and appreciated by golfers. However, as the game of golf spread to other lands, and especially as it became widely popular in North America, adaptations and stylistic modifications would be required for courses built on land dissimilar from linksland, and for this purpose the necessity of a professional architect to develop a design and construction strategy became evident. The task of the early Scottish architects, such as Old Tom Morris (1821-1908), was largely that of laying out the best possible sequence of holes over a property that was already well suited for golf and so little in the way of construction or landscaping was required. The Canadian-born American Charles B. Macdonald (1855-1939), profiled by Bahto (2002), who designed the first 18-hole golf course in the United States at the Chicago Golf Club (1893), coined the expression “golf course architect” in reference to himself, and went on to design such masterpieces as the National Golf Links of America (1908) and the Yale University Golf Course (1925).

The first three decades of the twentieth century were a period of demographic and economic growth in North America, accompanied with a rapid increase in participation in golf and associated demand for golf courses. Especially by the time of the boom of the 1920s, the opening of golf clubs in most North American communities of at least medium size and

associated need for architects to design the courses led to the establishment of golf course architect as a full-time profession in which many individuals and firms could make good money. Names such as A.W. Tillinghast (1876-1942), Donald Ross (1872-1948), Stanley Thompson (1893-1953), Alister Mackenzie (1870-1934), George Thomas (1873-1932), William Flynn (1890-1945), H.S. Colt (1869-1951), Charles Alison (1883-1952), and Seth Raynor (1874-1926), are now considered to be the great masters of golf course architecture, and all were active in the United States and Canada during the 1920s, a period that has subsequently come to be known as the "Golden Age" of architecture (Shackelford (1999)).

The most prestigious and well-heeled clubs would compete for the services of these architects, nearly all of whom were busy designing courses on more than one continent. The busiest and most widely-sought architect in the United States was the Scottish-born Ross, who is credited with at least 300 courses, although the degree of personal involvement he took varied depending on the prestige and fee that a club could offer. It was important to the reputation of a club and its membership that their course was designed by a top architect, and Ross, for example, "had a nationwide reputation…and it became a symbol of status to have a Donald Ross course" (Cornish and Whitten (1981, p. 80)).

Many of the finest U.S. courses of this period were situated in places like Long Island (New York), central New Jersey, or the sandhills region around the resort town of Pinehurst, North Carolina, areas that were frequented by the business elite of major cities like New York and Philadelphia, and that were characterized by the undulating sandy-soiled terrain that closely resembled the original linksland of Scotland and so was naturally best suited to golf (Waters (2013), Ross (1996)). Most of the top architects active in the U.S. were either from Great Britain originally, or had spent considerable time there and had the opportunity to play and study the best of the linksland golf courses. For example, C.B. Macdonald first became acquainted with the sport during his undergraduate studies at the University of St. Andrews, in Scotland, where he developed a friendship with Old Tom Morris, and in preparing for the design of his masterpiece at The National in Long Island, he conducted a rigorous study of the great British courses. The important point for the subsequent history of architecture is that the earliest top U.S. clubs had access to land ideally suited for golf as well as architects who had deep knowledge of the best historic courses built on similar land. The resulting courses required relatively little (compared to post-war design) in the way of artificial landscape construction, due to the natural suitability of the sites chosen. The "natural" or "minimalistic" (in terms of architectural intervention in the landscape) character of these courses would be emphasized by later generations of architects and critics. The conditions were thus ideal for the development of superb golf courses, at least for clubs at the top of the economic and prestige ladder.

The importance of intellectual creativity to the design of golf courses, and of convincing the field of the validity of one's ideas through written texts, as is characteristic of all creative fields (Caves (2000), Bourdieu (1996)), is evidenced in the case of golf course architecture by the many

writings published by practicing architects, whether in the form of books, treatises, magazine articles, or publicity brochures. Among the major Golden Age architects, we can cite, as a sample, the texts of Colt and Alison (1920), Macdonald (1985), Mackenzie (2019), Ross (1996), Tillinghast (1995) and Thomas (2020). The recent publication dates of the re-issues of these mostly inter-war writings witness the strong interest in the history of architecture that has developed since around 1980. As in any creative field, the marketplace is largely one of ideas, with the players competing to promote their own ideas as the truly important and original ones.

During the Depression and World War II, there was very limited golf course construction in North America, and many clubs went defunct and demolished their courses. It stands to reason that the more affluent clubs, possessing the better courses of the era, would be the ones more likely to have the resources to survive such a stressful period (although a noteworthy exception is C.B. Macdonald's fabled Lido club on Long Island), with this survivorship bias being of potential importance when we consider the evaluation of the architecture of this period by later generations. After this large time gap, golf course development resumed after the war, with a major boom in construction occurring world-wide during the 1950s and 60s. A new generation of architects emerged, with the most important names being the Americans Dick Wilson (1904-1965) and, especially, Robert Trent Jones (1906-2000), whose dominant position in the profession was such that this period is sometimes called the "Trent Jones Era". (Both architects had apprenticed under a Golden Age master, Wilson with William Flynn and Jones with Stanley Thompson). We will refer to it as the "Modern Period", although in recent polemics it is sometimes called the "Dark Ages" (for example on the influential website www.golfclubatlas.com).

The structured professionalization of the field accelerated during this period, with the establishment of the trade association American Society of Golf Course Architects in 1947, and the vast increase in technical sophistication as the dozens of young new architects were mostly university-trained in such fields as, for example, landscape design and construction, engineering, agronomy, and visual art. Rapid scientific and technical advances in turfgrass management, irrigation and drainage technologies, construction methods and machinery, as well as the introduction of the motorized golf cart, gave architects much greater control over the design and construction of their courses, and allowed for the development of courses on properties, and in climates, that had previously been totally unsuitable for golf. The rapid growth in the demand for golf courses, coupled with the limited supply of the gently undulating, sand-based properties that are best suited to golf, meant that the overwhelming majority of golf courses built in the post-war decades were on naturally sub-standard sites. For example, the southeast Florida counties of Dade, Broward, and Palm Beach saw hundreds of new golf developments, usually associated with retirement or vacation condominium projects, and built on flat, swampy land. Rolling Hills, the *Caddyshack* course referred to in the Introduction, was in this category.

Since the natural soils on which most modern era courses were constructed lacked the firmness, quick drainage, and natural small-scale undulations that make for an optimal golfing experience, the modern architects were often constrained, for drainage reasons, to omit smaller scale undulation from their courses. This fact, combined with the artificially irrigated and generally softer playing surfaces, led to these courses being better suited for an "aerial" form of golf, where the preferred technique would be to flight the ball a specified distance and have it stop immediately upon impact with the ground. Since the majority of the new courses were built in the United States by American architects using mostly American technology, this style of golf, sometimes called "target golf", came to be identified with the United States, and promoted by its architects and their supporters as being the distinctively modern, advanced way of playing the game and of designing its courses. Some of the architects became media celebrities, especially Jones (Hansen (2014)), who, in addition to publishing brochures and eventually a book (Jones (1989)), was profiled in a long and widely read *New Yorker* article by Herbert Warren Wind (1951), was publicly castigated by top professional golfers Ben Hogan and Sam Snead due to his radical redesign of the classic Donald Ross course at Oakland Hills Country Club in preparation for the 1951 U,S. Open, and whose rivalry with Dick Wilson was profiled in a *Sports Illustrated* article (*Sports Illustrated* (1962)). This redesign by Jones of a classic Golden Age course was not an isolated phenomenon, as many clubs with pre-World War II courses felt that their courses were now "out of date" or "old-fashioned", and needed to be significantly revised to bring them up-to-date with the latest architectural style.

Our objective in this paper is to analyze the means by which an upstart movement of young architects calling themselves the Minimalists established their style as the dominant one starting in the early 1990s, with theoretical explanations in Section 3 and an econometric analysis in the subsequent sections. Here, we will present a brief account of how this stylistic advance came about, with emphasis on the aspects most interesting for the present study, viz. how these architects and writers sympathetic to their style characterized the relative strengths and weaknesses of the two broad historical schools of design referred to above.

A renewed consciousness among many in the golf community of the history of the sport, and in particular of the design of its courses, with associated publications through books and magazine articles, began to develop in the 1970s, taking hold in the 1980s and accelerating rapidly after 1990. The first edition of the popular *World Atlas of Golf,* which contained detailed profiles, accompanied by layout maps and colour photographs, of dozens of the best courses from all continents, was published in 1976, with revised editions being published subsequently (Ward-Thomas et al (1988)). A major landmark in the history of architecture was the publication in 1981 of *The Golf Course* (Cornish and Whitten (1981)), which contained a comprehensive history of the discipline, along with biographies of hundreds of architects, both historical and living (Cornish and Whitten (1993) later published a significantly revised and updated edition). The literature on golf course architecture and its history has since become enormous, and we cite here only a few of the many important books that have been published since 1990: Bahto (2002), Cupp and Whitten (2012), Doak (1992, 1996), Dye (1995), Goodwin (2006), Hansen

(2014), Hurdzan (2006), Jones (1989), Jones (1993), Klein (1997), Nicklaus (2002), Rowlinson (2008), Shackelford (1999, 2003), Waters (2013), and the recent comprehensive history by Cutten (2018).

It is not unusual for avant-garde movements in the arts to take inspiration from a maverick or non-conformist member of the earlier generation, who is some way attempting to buck the prevailing style. In painting, for example, Manet had this relation with the Impressionists, and Hofmann with the Abstract Expressionists. In the case of the architectural Minimalists, they were inspired by, and some of their leaders apprenticed under, the Modern-era architect Pete Dye (1925-2020), who had started out working in the standard Modern idiom, for example at Radrick Farms (1965) at the University of Michigan. A lengthy tour of many of the top courses in Great Britain inspired Dye to incorporate into his designs certain prominent construction features of the British courses that had been omitted from the Modern design aesthetic of the Trent Jones school. This represented a partial return to the style of earlier generations of architect, although in many ways Dye's courses continued to follow the Modern style. Nevertheless, two ambitious young architects, Tom Doak (b. 1961), who had been an apprentice with Dye, and Gil Hanse (b. 1963), were infused by the growing consciousness of architectural history, had both studied this history intensively as part of their programme in golf architecture at Cornell University, had both received special Cornell fellowships funding extended architectural study trips the British Isles, and, together with former Dye assistant Bill Coore (b. 1946) and his partner the player-scholar Ben Crenshaw (b. 1952), would become the leaders of a new movement in architecture.

Although many architects of the Modern school had received university training in the various technical aspect of golf course design and construction, the explicit incorporation into their studies of the appreciation of the overall historical arc of the field was new, and played a vital role in the choices the Minimalist architects would make as to the direction they wished to follow in their work, and the polemical strategy they would adopt in its promotion. They were largely motivated by a sense that architecture had lost its way, that the entire Modern school had been based on false premises as to what made for the most enjoyable type of golf course, and that the architectural profession had to reorient itself in order to revalue and recapture the qualities that had made the British links courses and the early American courses so much more interesting to play on than the vast majority of the post-war courses. One aspect of contemporary architecture they particularly deplored was the increasingly overconstructed, artificial-looking courses that contained picturesque or striking man-made features that looked spectacular in a magazine advertisement but added nothing to the playing interest of a golf course, and tended to be extremely expensive to construct and maintain. This trend, which they saw as the logical conclusion of the entire post-war technological emphasis on man-made courses that did not adhere to the natural features of a site, became especially pronounced during the economic prosperity and conspicuous consumption of the 1980s, during which decade the likes of Donald Trump and Steve Wynn became involved in golf course development,

with such predictably extravagant (some would say "grotesque") features as artificial waterfalls and fake Italian Baroque fountains.

The new movement called itself Minimalist to distinguish itself philosophically from the Modern school and its emphasis on heavy reworking of the natural landscape. They saw the architect's job as guiding the client in the choice of a site that contained natural features and soil types most conducive to golf, and to intervene as little in possible in converting the site into a golf course. They felt that the ease with which modern architects could manipulate a site had led to the choice of substandard sites, or to the mishandling of potentially interesting sites. The variety of natural features on a good site would make for more interesting and enjoyable golfing than anything an architect could create artificially, and besides, interventionist courses built by experienced modern architects tended to be mannered and lacking in variety.

The spokesman and intellectual leader of the Minimalists was Tom Doak, who after writing several articles for *Golf* magazine in the 1980s, and editing that magazine's Best in the World golf course rankings, published in the 1990s two books that would have a major impact on how the general golf community viewed architecture and evaluated courses: *The Anatomy of a Golf Course* (Doak (1992)) and *The Confidential Guide to Golf Courses* (Doak (1996)). The former, which included a forward by Ben Crenshaw, and dozens of architectural plan drawings of great golf holes by Gil Hanse, has been described as being the "manifesto" of the young movement (Goodwin (2006)), and does indeed bear many of the hallmarks of an avant-garde artistic manifesto (Bourdieu (1993, 1996), Poggioli (1969)). In particular, it advances the novel aesthetic approach being proposed through the adoption an adversarial position vis-à-vis the current dominant style, in this case through the critique outlined above, and the deprecation of previously admired courses designed by such masters as Trent Jones and Dick Wilson. In addition, it posits the desirability of a return to an earlier Golden Age, when giants walked the earth, when great works were produced, and before the decline into the current corrupt age. This polemical characterization of the history of a field by avant-garde artists trying to enter the creative marketplace is very common, has been referred to as the "grandfather" or "leapfrog" effect, and has been observed in various contexts by Bourdieu (1993, 1996), Friedlander (1965), and Bate (1970).

In effect, Doak and his allies were seeking to persuade the general golfing community that a revision in general attitudes as to what were the properties that constituted "good" or "bad" golf courses was called for. In addition to their own writings, a group of young golf writers sympathetic to the new movement joined the polemic in its support, such as Klein (1997) and Shackelford (2003), and the website www.golfclubatlas.com was founded largely to promote this viewpoint, and now provides hundreds of golf course profiles, interviews, and a discussion group to which Tom Doak is a frequent contributor. The group has been successful in that its members are now the top active architects in the world of golf design, having been chosen by such advanced patrons such as Dick Youngscap and Mike Keiser to design the critically and

economically successful courses at such high profile clubs as Sand Hills Golf Club in Nebraska, Ballyneal in Colorado, Renaissance in Scotland,and Tara Iti in New Zealand, and the enormously popular destination golf resorts at Bandon Dunes (Oregon), Barnbougle Dunes (Tasmania), Cabot (Nova Scotia), and Streamsong (Florida), aong others. In addition, Hanse won the intense and highly publicized competition to design the 2016 Rio Olympic course (Whitten (2016)), a competition whose landmark historical importance will undoubtedly come to be comparable to the 1922 competition to design the Chicago *Tribune* building (Bruegmann (2000)).

As an important component of this school's strategy was to deprecate the achievements of the post-war Modern school in favour of the earlier "Golden Age" generation, and to persuade the golfing community that this revaluation of past schools of architecture was valid, we can ask if the architects were successful not only financially in terms of securing the most important commissions in recent decades, but also polemically in terms of actually influencing the field's overall retrospective judgment of the relative worth of past creative productions. Fortunately, there exists measures of these general attitudes in the form of expert polls of golf course rankings. Many of these are published regularly, by various golf magazines and websites, and so in principle it would be possible to study the evolution of these rankings over time, and especially since 1990, when the writings of Doak and his allies were starting to appear. Since these rankings are of individual golf courses rather than of architects or groupings per se, our question would then be framed as to whether the courses designed by architects largely active before World War II tended to rise in the rankings, relative to courses designed by post-war architects (excluding those becoming active after about 1990). We will investigate this question in Sections 4 and 5 with data from the oldest and best-known of these magazine polls, the Top 100 in the United States as rated by *Golf Digest* magazine.

3. DISTINCTION AND JUDGMENTS OF QUALITY

The empirical analysis reported below is concerned with structural change, over time, in the position within magazine rankings of different categories of golf course. That such change would occur indicates that there has been change in the judgments by members of the rankings panels, whom we can take to have some degree of expertise and/or intrinsic interest in golf course architecture. We speak therefore of "expert judgments" of quality, where we can suppose that such judgments are arrived at through the exercise of an implicit hedonic function that weighs the different aspects or features that can make a golf course "good" in the eyes of an informed expert. If we suppose for simplicity a single hedonic ranking function shared by all members of a panel, then what we are interested in studying is whether this function has changed over time, for example through the weightings that it gives to certain characteristics of a course. Structural change in course rankings would then be a result of structural change in the hedonic function. We can go further and suppose that the hedonic ranking function corresponds with a hedonic utility function possessed by the average person who plays golf. In this case, we can suppose that the following concepts are identical with one another: magazine ranking, expert judgment of quality, and utility or preferences of the people who play golf and are members of golf clubs. In the following discussion, we will suppose that these are indeed identical and use these expressions interchangeably, and try to delineate a specific mechanism through which they can change over time.

The question of how one judges quality in the case of cultural and artistic products, and the interaction between creators, experts/critics, informed consumers, and the general public that leads to some sort of consensus as to what creative products are considered to be "better" than others, is of course a very complex one, some might even say "mysterious", and only becomes more difficult to analyze when advanced creative innovations are under consideration. We do not propose here to provide a full characterization of all thinking that exists on these questions, but will focus on one line of thought that has been predominant in the analysis of leading thinkers in the area for at least a century, viz. that of "distinction" (see, for example, Becker (1996), Bourdieu (1984), Fry (1998) and Veblen (2007)). The basic idea is that the consumption of cultural goods is the means through which one displays the quality of one's taste, which is one of the essential defining components of personal identity and thus of one's sense of worth. Thus a change in the hedonic utility function for such goods could be due to a change in the relative degree of social distinction associated with their conspicuous consumption.

The concept of conspicuous consumption is of course due to Veblen (2007), first published in 1899, on the eve of the introduction of golf course architecture to North America, who seems to view invidious comparison due to the struggle to assert one's social prestige as being the only motivating factor for the consumption of anything beyond the minimal needs of subsistence. Although there is barely a mention of golf in Veblen's text, sporting activities in general occupy a major place in his model – it is through the display of skill and prowess on the sporting field that

an individual displays his (such activities are seen as an exclusive male preserve) ability not only in the attributes necessary to obtain a position of social dominance in a primitive society, but also the possession of the leisure time necessary to develop such skills. That such skills are useless in a modern industrial society only increases the prestige and distinction accorded to their possession, as a conspicuous marker that one's existence is above the mundane life of productive labour. Similarly, the possession of highly-developed taste and the ability to render judgment on the quality of such cultural products as paintings, modern jazz, fine wines, and golf course architecture, is a means of displaying that one has the leisure time (as well as the pecuniary resources and social connections) to allow the cultivation of such arcane tastes.

A detailed theoretical and empirical analysis of the concept of distinction and its association with consumption choices in the realm of culture and lifestyle is provided in the influential study of Bourdieu (1984). In this model, agents are situated in a two-dimensional social space, with one dimension corresponding with pecuniary resources ("economic capital") and the other with acquired cultural sophistication ("symbolic capital"). The model is supplemented with a third dimension, "trajectory", which describes the direction in which an agent is moving, or attempting to move, within this matrix. An individual's identity and social prestige is directly related to his position in this matrix (again, since the model is tested on French data from the 1960s and 70s, the active agents can be supposed to be male), and the means by which one asserts one's identity and distinction is through the display of one's taste, where taste is considered to apply to the entire gamut of possible cultural and lifestyle choices, such as the arts, but also clothing and interior design choices, food, newspapers, and, importantly, choice of sporting activities. Bourdieu's statistical analysis finds strong correlations between the position of agents in the social-distinction matrix, and their lifestyle choices in all these areas.

Bourdieu (1984) assigns substantial importance to the sport of golf, which is referred to dozens of times throughout the book. In his model, choice of preferred sporting activity correlates strongly with social position, with golf being the preferred sport of agents in the highest pecuniary segment of society. Within the model, then, the playing of golf, and especially the membership in a golf club, are important identity markers, signally that the person does belong to the highest socio-economic stratum, or "fraction". Interestingly for our study is Bourdieu's (1984) contention that, within this fraction, there are very fine additional distinctions that may be visible only to members of the fraction, so that there exist fractions of fractions. The sub-fraction of the highest economic fraction to which one belongs will not then be signalled so much by the fact that one plays golf, but rather by the specific golf club of which one is a member, with Bourdieu's (1984, p. 158) discussion of the top golf clubs in Paris being of especial interest to our analysis. Within the category of exclusive private golf clubs, there are some that are more exclusive than others, and it is well-known among the members of these clubs what the prestige ordering is. Although Bourdieu (1984) does not specifically refer to the architecture of its course as a factor in the relative prestige of a club, one can confidently suppose that this is indeed an important factor, and that club members are well aware of the architectural pedigree of their golf course, to a much greater degree than the building-architecture pedigree of their

clubhouse (we feel safe in conjecturing that the members of Shinnecock Hills Golf Club in Southampton, NY attribute greater importance to the fact that William Flynn designed their golf course than to the fact that Stanford White designed their clubhouse). Indeed, the top golf clubs in Paris possess courses designed by the greatest architects of the golden age, a fact of which the clubs themselves are quite aware (at least according to anecdotal evidence obtained by one of the authors, who has visited and played golf at a number of the top Paris clubs). In this context, Bourdieu's (1984) concept of trajectory is also important, as one can view the joining of a golf club on the part of a person from a relatively modest economic background, or the upward movement in the prestige of club for a person already a member of a club, as a conspicuous indicator that the person is on an upward socio-economic trajectory.

The inclusion of the desire for distinction within a neoclassical microeconomic utility function was proposed by Stigler and Becker (1977), in which the utility function contains a "production function" that converts the material commodities acquired in the market into the immaterial commodity of distinction, so that the latter yields direct utility, and the former indirect utility, through the mediation of the production function. If we suppose that the specific golf club to which the consumer belongs yields utility only through the distinction channel, with various aspects of the club, including its architectural style, contributing to its utility value through a parametric functional relationship, then it is possible to see that the relative valuation of different architectural styles could evolve over time due to the evolution in the parameters in the utility function. The possibility of such evolution is not discussed by Stigler and Becker (1977) nor in the essays collected in Becker (1996). How and why these parameters may change, or be caused by interested parties to change, will be discussed in the sequel. We will focus in the remainder of this section on structural change in the "distinction" component of the utility function, but this does not suppose that distinction is the only means by which golf club membership enters a utility function, only that structural change in this component, ceteris paribus, is sufficient to generate the empirical results that we present in the following sections.

A mechanism through which considerations of distinction can be associated with evolutions in judgments of quality can be derived from the analyses of Fry (1998) and Bourdieu (1993, 1996). Roger Fry (1866-1934) was an art historian, painter, member of the Bloomsbury group, and friend of J.M. Keynes, who wrote numerous essays that analyze the economic aspects of the market for advanced modern art, many of which are collected in Fry (1998). In Fry's view, for formally innovative modern art to become valuable, two categories of collector are necessary. The first collectors to notice original art typically belong to a sophisticated and culturally aware social segment, are financially comfortable if not extremely rich, and are in close contact with the newest developments, often through personal relationships with avant-garde artists and their critics and dealers. The first market recognition and validation of new art comes from this segment, and the best of these collectors develop renown and prestige for their acumen in "picking the winners". As an artist's reputation grows, a second group of collectors enters the market, these being much more affluent, if less sophisticated, than the first group. These collectors are interested in "blue chip" art, and their prestige in the art world comes from their

pecuniary power to obtain for themselves top works of the most celebrated artists. In terms of Bourdieu's (1984) socio-economic matrix, these segments of collectors correspond to positions that are high, respectively, in symbolic capital and economic capital. We note that whatever the degree of intrinsic interest in modern art that may be present in these collectors, their collecting success does confer prestige and distinction, and in each case a form of distinction that is pertinent to the specific social fractions to which they respectively belong. The first group of collectors are admired by the "cultural" crowd, and the second by the "pecuniary" crowd.

Although not inconsistent with the analysis of Fry (1998), that of Bourdieu (1993, 1996) focuses principally upon the strategies employed by the avant-garde artist new to a field to attract the attention of the field and convince it that the proposed new work is truly original and important. This analysis has to an extent already been outlined in the Introduction. The work of a new artist will be taken more seriously if it can be justified as being part of an important new direction in the overall field. For this reason, avant-garde artists tend to group themselves into movements, groupings of artists working on similar problems and with similar stylistic concerns (Poggioli (1969), Hodgson and Hellmanzik (2019), Hodgson (2022)). The movement often has a name that is indicative of its aesthetic direction, especially insofar as this direction runs counter to existing predominant styles, and significant use is made of the written word, in the form of manifestos, magazine articles, pamphlets or books, written by members of the movement itself or sympathetic critics or writers, to explain the historical importance of the new style and how it represents an important advance on existing styles. The position adopted is typically adversarial with respect to these latter, and the argument is typically bolstered by appeal to an earlier classical style. This is the "grandfather" effect referred to above. This trope has the effect of lending an aura of distinction to the new art, and to its champions and collectors, because in positioning the art as a revival of a lost "golden age", the collectors of this art are compared to legendary patrons and collectors of glorious past ages. Patrons of the new art are likened, for example, to the great Maecenas of Ancient Rome, whose name itself means "patron of the arts" in some languages, such as French.

The model described in this section, although developed largely to describe the market for traditional fine arts such as painting and poetry, fits very closely the field of golf course architecture after 1990, as described in Section 2. The young architects formed a movement and named it "Minimalist", the name itself highlighting what they saw as the principal corruption in the architecture of the time, they had a spokesman in Tom Doak, manifesto-style statements in his books (Doak (1992, 1996)), supportive critics in young golf writers such as Geoff Shackleford and Bradley Klein, and adventurous patrons in Dick Youngscap and Mike Keiser. After becoming established through these means, they moved into the high-profile position allowing them to procure such prestigious and/or lucrative commissions as the design of the Rio Olympic course and the complete redesign of the high-modernist Dick Wilson courses at the Trump Doral resort in Miami.

4. DATA SET

The goal of our empirical work is to analyze data on course rankings to assess whether, and to what extent, this group of young Minimalist golf architects was successful in effecting a broad revaluation of Golden Age courses relative to post-war courses. To do this we have collected data on bi-annual U.S. course rankings published by one of the two most well-known golf related periodicals, *Golf Digest*.[3] This data spans from 1991, approximately the start of the movement, until present. We use regression analysis to assess whether, starting in 1991, rankings of Golden Age courses tended to improve relative to post-war courses. This would be consistent with such an artistic revaluation.

As noted above, *Golf Digest* began its rankings in 1966. Cummings (2020) provides a detailed history of the rankings and its methodologies which we rely on for much of the present discussion. The original group of panelists who *Golf Digest* surveyed to construct the rankings was small – about 100 mostly professional and top amateur golfers. At this point the rankings grouped courses into quality levels (e.g. top 10, 10-20, 50-100) rather than individually ranking them. The rankings were very popular – reader anticipation for the monthly issue with the rankings has been related to the famous *Sports Illustrated* annual "Swimsuit Issue"[4]. Presumably as a result of this popularity, in the mid 1980's *Golf Digest* decided to better formalize its ranking system. Ron Whitten, a lawyer by trade but avid golf course architecture enthusiast and writer[5], was put in charge of the task of managing the ratings, the ranking criteria described earlier (see Appendix) were instituted, and courses were now to be numerically ranked 1-100. The number of panelists was also increased, to about 400 by 1990. The typical panelists were now no longer "industry" people, but excellent amateur golfers (eventually with an official USGA handicap requirement of below 5[6]) who travelled frequently and played a lot of courses (there is a minimum number of courses that panelists must visit per year). Again, likely due to reader popularity, more sets of ratings were introduced, including top world courses, top public courses, top resort courses, top regional courses, etc.. Ron Whitten continued to lead *Golf Digest*'s rankings until he retired in December, 2020[7] and while minor tweaks have been made, the general structure of the *Golf Digest* rankings has remained the same over the past 30 years. The number of panelists has continued to increase, to around 1100 in 2012, and over the past few years they have made another concerted effort to increase panelists.

[3] The other is *Golf Magazine*, and in a later section we also examine its ranking data. Another popular ranking is that of *Golfweek*, but their rankings are not ideal for our purposes, first because they were initially published in 1997, and second because they typically rank golden era and post-war courses separately, which is exactly what we want to compare.

[4] 2012 Interview with Ron Whitten - https://www.golfcourseindustry.com/article/gci0912-golf-greatest-courses/

[5] http://frystraka.com/en/news/2017/05/19/how-ron-whittens-career-merged-from-law-to-golf/

[6] Of all golfers who have official USGA handicaps (which is a subset of overall golfers, typically those who play regularly at a home course) about 10% of men and 2% of women have handicaps below 5 (https://golf.com/news/how-your-handicap-index-compares/)

[7] https://www.linkedin.com/in/ron-whitten-535bbb1a2

While extremely popular, course rankings have not been without controversy and debate. First, there is obviously heterogeneity in tastes. Any overall ranking is not only going to average over that heterogeneity but also depend on the set of panelists who contributes to the rankings being averaged over. Since Ron Whitten took over at *Golf Digest*, that has been addressed by making access to becoming a panelist quite open - essentially if one qualifies according to the handicap index and travel requirements (i.e. visiting enough courses to rank each year), one can apply and become a panelist.[8] There is also the issue of monetary incentives involved in rankings. Particularly for a new course, getting ranked is likely a large financial boon. So one might worry about raters being financially or otherwise rewarded by courses in order to induce good ratings. With a large number of panelists this might be particularly challenging to monitor. *Golf Digest* addresses this with a very clear code of conduct – panelists are allowed to play courses they are rating for free, but cannot accept anything else from courses. To preserve the ranking's reputation, Whitten and his colleagues also scrutinize ratings of individual raters, e.g. for outliers or presumably other odd patterns[9]. Lastly, within the past 10 years, *Golf Digest* has been charging panelists for the honor of serving on the panel - currently this appears to be a $1500 initiation fee plus a $300 annual fee. The reason panelists would be willing to pay such a fee is because there is value in being able to play highly ranked courses for free. While there has been recent controversy about this policy, the size of these fees is relatively small (relative to e.g. the costs of travelling to many courses per year, the costs of a general golf course membership, and the likely disposable income of those in the position to be able to make these rating visits), and we suspect it is more reflective of the recent decline of the magazine industry than anything else (e.g. *Golf Digest* was recently sold by Conde Nast to Discovery for what was reported to be only $35 million[10]). In sum, we are not particularly concerned with these caveats for the purposes of our study. The issue of implicit bribes may be an issue but our focus is on established Golden Age and Post-war courses, not new courses where we would expect this to be a bigger potential issue. Moreover, we have no a-priori reason to think these incentives would be different between Golden Age and Post-war courses.

Our dataset is composed of *Golf Digest*'s 15 biannual U.S. golf course rankings between 1991 and 2019[11]. Each one reports the top 100 courses in America from highest (1) to lowest (100), although in 2011 there was a tie for position 100, so 101 courses were ranked. The rankings are fairly stable over time, in particular at the top of the ranking.[12] This is because golf courses are

[8] As we discuss later, *Golf Magazine*'s rankings take a quite different approach to this, with a much smaller (~100) panel of selected, more eminent, golf related individuals.

[9] See https://www.geoffshackelford.com/homepage/2017/1/12/golf-digest-looks-to-double-size-of-course-rating-panel-by-2.html

[10] https://www.nytimes.com/2019/05/13/business/media/conde-nast-golf-digest-discovery-communications.html

[11] Because of the strong public interest in these rankings, they are reproduced on many websites. Our dataset was collected from https://www.planetgolf.com/rankings/usa.

[12] Simply regressing current rank on lagged rank (when available) results in an R^2 of 0.86 and a coefficient on lagged rank of 0.95.

physical structures that for the most part remain stable over time. Except for the rare instances of a golf course undergoing significant structural renovations, the only one of the seven criteria listed in the Appendix that can fundamentally change much over time is conditioning. One particularly common reason why a course's rank may change over time is the building of new courses. A great new course that ends up being ranked in the top 100 will obviously displace existing courses ranked below it. Over the time period of our data, 62 newly built courses were deemed worthy enough to enter the top 100 ranking (a Tiger Woods inspired golf boom in the 1990's and early 2000's had resulted in thousands of new golf courses being built). Of course another reason for rankings changing over time is what we are hypothesizing and testing for in this paper – i.e. a potential broad revaluation of artistic merit inspired by the Minimalists.

While the top of the ranking is relatively stable, at the bottom of the rankings courses often drop out of (or into) the top 100 from year to year. For those courses we only know that they were ranked *outside* of the top 100 in that year, and we address this censoring issue in various ways in our empirical work. Of course, since there are more than 10,000 golf courses in the United States, the vast majority of courses are always censored. Since the majority of our specifications include golf course fixed effects, we can simply drop these "never-ranked" courses from our analysis. Intuitively, given the censoring and our desire for course fixed effects, there is little if no information in these "never-ranked" courses relevant for our hypothesis.

Focusing attention on the courses who *ever* appeared in the rankings in our data, there are a total of 192 courses. Of these, 64 courses were built between 1894 and 1939 – these are our "Golden Age" courses, and 46 were built between 1948 and 1985 – these are our "Post-war" courses (none of the 192 courses were built between 1939 and 1948). In our regression analyses we do not include the remaining 82 courses that were built after 1985. The designs of post-1985 courses were likely to have been affected by the Minimalist movement, so it would be inappropriate to classify them as "post-war" architecture. So our work only compares Golden Age to Post-war courses. What we are examining is the evolution of rankings over time for these 110 total courses, in particular assessing whether this evolution varies between Golden Age and Post-war courses.

5. ECONOMETRIC MODEL AND RESULTS

Our basic econometric model is designed to relate course rankings over time to course characteristics, in particular whether or not a course was designed during the Golden Age. Denoting courses by *i* and time periods by *t*, consider the following model

(1) $$rank_{it} = \beta_0 + \beta_1 t + \beta_2 t * goldenage_i + \beta_3 X_{it} + \epsilon_{it},$$

where $rank_{it}$ is course *i*'s rank in the *Golf Digest* ranking in year *t*, $goldenage_i$ is a dummy variable equal to one if course *i* was built in the Golden Age (and zero for Post-war courses), X_{it} are other course characteristics, and ϵ_{it} is an unobservable term. Note that we use the traditional definition of $rank_{it}$, i.e. where a ranking of 1 is highest and a ranking of 100 is worst. Hence, a positive coefficient implies a course is being perceived as **worse** with respect to a change in that variable.

The parameter β_1 measures the effect of the passage of time on a course's rank. Since courses are essentially fixed objects, if there were no revaluation of tastes over time one might not expect a trend in rankings - analogous to the price of a stock following a martingale. But given our rankings are only ordinal, there is still reason to expect the ranking of a course to generally worsen over time (i.e. $\beta_1 > 0$). This is because, as discussed earlier, new courses are continually being built and to the extent that the most exceptional of these new courses might enter the top 100 ranking, existing courses' rankings will be lowered.

Our primary coefficient of interest is β_2, which measures the extent to which, over the time period 1991-2019, rankings of Golden Age courses trended differently than post-war courses. If the Minimalist movement to revalue Golden Age courses was successful, we would expect to find $\beta_2 < 0$, i.e. rankings of Golden Age courses to be improving (i.e. decreasing) over time relative to Post-war courses. As the majority of relevant course characteristics X_{it} (e.g. architect, style, location) are fixed over time, we replace X_{it} with fixed effects for most of our econometric models, i.e.

(2) $$rank_{it} = \beta_1 t + \beta_2 t * goldenage_i + \alpha_i + \epsilon_{it}.$$

This is the basic model that we utilize. In discussing potential threats to identification of β_2, it is important to think about what might enter the unobservables ϵ_{it}. One possibility is course

conditioning. In theory this can change over time, though because the courses we are considering are such top courses (and often private), we suspect there isn't that much variation in this. Another possible component of ϵ_{it} are course renovations. While extensive renovations to a course's structure are infrequent, they do occur, and could significantly improve the ranking of a course over time. With these possibilities in mind, we can think about potential sources of bias in β_2. Bias could occur if, e.g., course conditioning improvements were made in an increasingly disproportionate way favoring Golden Age courses over time, or if renovations were disproportionately made to Golden Age courses over time. We think it is relatively implausible that the first possibility (course conditioning) would have a large effect on β_2. The second possibility, renovations, seems more plausible and we further consider this issue later in this section. That said, even if part of our estimated coefficient β_2 were driven by such "biases", one could construe these effects as also capturing evidence of a positive revaluation of Golden Age courses. More specifically, golf clubs becoming more willing to invest significant sums of money into the conditioning and renovations of Golden Age courses (relative to Post-war courses) seems to also be evidence that the Minimalists were able to engender revaluation of Golden Age courses.

Table 1 contains various estimates of our model. The main econometric challenges in estimating (2) are that for courses that drop out of the top 100 (or start out of the top 100), the dependent variable $rank_{it}$ is censored. The first column addresses this in a simple, but crude, way – simply assigning $rank_{it}$ to 120 for courses that we know are outside of the top 100. The estimate of $\beta_1$is 1.0547. This implies that the ranks of courses in our sample, i.e. those built in or prior to 1985, were worsening on average by about one per year. As described above, this is likely driven by new courses (built after 1985) entering the rankings and displacing or lowering the rankings of the courses in our sample. The estimate is statistically significant. Note that all the reported standard errors in our tables are adjusted for clustering at the golf course level. This means that our standard error estimates are robust to arbitrary patterns of correlation in errors over time for an individual course (which could occur even after our inclusion of fixed effects, e.g. serial correlation).

The estimate of β_2 in this first specification is -0.6698, and this coefficient is statistically significant with a t-stat of 2.54. This value of this interaction term implies that through our sample the rankings of Golden Age courses were worsening *less* (by 0.6698) over time than Post-war courses. In our view, this is evidence of a post-1990 revaluation of Golden Age courses, and it is of substantial size. Together with β_1 these estimates imply that while a Post-war course would be expected to fall about 29 ranks between 1991 and 2019, a Golden Age course would be expected to fall only about 11 ranks. In other words, for a Golden Age and Post-war course with similar ranks at the start of the sample, by the end of the sample the Golden Age course would be ranked 18 slots ahead of the Post-war course.

Our second specification in Column 2 of Table 1 adds an additional explanatory variable to the model. As mentioned earlier, Pete Dye was an unusual Post-war architect in that, compared to others, his work was much more closely inspired by Golden Age architecture. He was also the architect who Tom Doak apprenticed with prior to starting the Minimalist movement. Given this, it seems reasonable to treat Pete Dye's courses as distinct from the other Post-war courses, and Column 2 does this by adding an additional interaction term between time and a dummy variable indicating that a course was designed by Dye (there are 9 such courses out of the 110 in our dataset). The coefficient is negative (-0.6179), indicating that, like Golden Age courses, Dye courses were not falling in the rankings to the extent of other Post-war courses. The magnitudes of the Pete Dye and Golden Age interaction coefficients (the latter now -0.7907) are similar, i.e. the results suggest the rankings of Pete Dye courses are behaving much like Golden Age courses, which makes theoretical sense given his inspiration. While the coefficient on this Pete Dye dummy variable is not statistically significant in this particular specification, we keep it in our following regressions as it makes theoretical sense and it does become borderline significant in some of the specifications.

Columns 3 and 4 provide two simple robustness checks of our model. Instead of setting censored values of $rank_{it}$'s to 120, in Column 3 they are set to 101 , and in Column 4 they are set to 140. In terms of signs and statistical significance the results are analogous to Column 1. While the magnitudes of β_2 (and β_1) change, the relative magnitudes remain similar. The changes in overall magnitudes make sense given the arbitrariness of our choice of what to set censored $rank_{it}$'s to. When we set them to 101, we are clearly underestimating the decline in the ranking of courses that fall off the list, and the reverse is likely true when we use 140. In any case, the continued statistical significance of our estimates of β_2 in these models continues to support our primary hypothesis.

Columns 5 and 6 take what is perhaps a more appealing approach to the censoring problem, using Tobit models that explicitly model the upper censoring of $rank_{it}$ at 100 (actually, at 101). There are a couple of caveats here. The first is that Tobit models require a normality assumption on ϵ_{it}, and the second is that allowance for fixed effects in Tobit models creates some potential econometric issues. Column 5 reports what is essentially a fixed effect Tobit. Since the Tobit model is non-linear, it cannot simply be mean-differenced to remove the fixed effects and obtain estimates. What we can do is add 110 course dummy variables into the model and obtain estimates that way. However, again given the non-linearity of the model, this does not produce consistent estimates of the common parameters β_1 and β_2 under the standard assumption that $N \to \infty$ with T fixed. For consistency of these parameter estimates, one needs to also assume $T \to \infty$, and our T=15 is probably borderline for such an approximation to not be prone to potential small sample biases. Given this, we also consider a random effects Tobit model in Column 6. In this model the α_i's are instead treated as normally distributed random effects that are independent of the other explanatory variables in the model. In contrast to the fixed effects Tobit model, this does provide consistent estimates of β_1 and β_2 for fixed *T*, but it requires the additional independence and normality assumptions.

Examining the results in Columns 5 and 6, it is first notable that the two sets of coefficients are very similar, perhaps comforting given that each specification has its limitations. The estimates of β_1 and β_2 are significant and of similar magnitude to the results in prior columns. In fact, the estimates of β_2 suggest even larger differences between the trend of Golden Age versus Post-war course rankings than the earlier estimates. In the fixed effect specification, $\beta_2 =$ -1.2215, and in the random effect specification $\beta_2 =$ -1.3310. These estimates imply that between 1991 and 2019, Golden Age courses improve an average of, respectively, about 34 or 37 ranks relative to Post-war courses.

Given the similar results between the Tobit and linear specifications, Columns 7 through 10 return to the simple linear model (with a censoring rank of 120) for some more robustness checks. Column 7 restricts the regression sample to courses that were never ranked higher than 20, and Column 8 to those never ranked higher than 40. These are motivated by the casual observation that the top of the top 100 contains highly visible, historic, cream-of-the-crop courses (often chosen as the venues for televised major professional golf tournaments) that are relatively static in their rankings, while there tends to be more movement in rankings further down in the top 100. The results in Column 7 are quite close to the original results, while the estimates of β_1 and β_2 in Column 8 are substantially larger in absolute value. The suggests that the effects we are identifying may be stronger for courses in the lower half of the rankings. Columns 9 and 10 assess robustness to different ending years for our set of Post-war courses. Column 9 ends the period in 1980 (rather than 1985 in our base specifications), and Column 10 ends in 1970. The estimates are not substantially different from our initial specifications, suggesting that the ranking patterns for Post-war courses built between 1970 and 1985 are similar to those between 1945 and 1970.

Columns 11 and 12 investigate alternative functional forms for our regression model. Column 11 alternatively uses the square root of $rank_{it}$ as the dependent variable, essentially defining similarly ranked courses that towards the bottom of the top 100 to be "closer" than similarly ranked courses ranked courses at the top. Column 12 adds interactions with t^2 in addition to interactions with t, i.e. thus allowing for a non-linear effect of time on rankings for both Golden Age and Post-war courses. While the estimates of β_1 and β_2 in Column 11 are not comparable to our other specifications, they continue to be statistically significant and support our hypothesis. The magnitude of the estimate of β_2 relative to β_1 is slightly smaller - implying that Golden Age course rankings are declining about half as fast as Post-war courses. The coefficients in Column 12 are hard to interpret individually, but the coefficient on β_2 remains negative and statistically significant, and the coefficient on the interaction between t^2 and Golden Age is positive and significant. This suggests that the relative improvement in rankings of Golden Age courses were smaller over time, i.e. the bigger changes occurred closer to the beginning of the sample in 1991.

We further address the question of how these effects varied over the time period of our data in Figures 1 and 2. These report coefficients from regressions in which instead of including *t* and interactions of *t* (plus in some cases t^2), we include year dummies for each of the 15 ranking years, as well as those year dummies interacted with an indicator for Golden Age courses. Figure 1 plots the 15 Golden Age interaction term coefficients (as well as 95% confidence interval bands) in the linear model, and Figure 2 does the same where the 15coefficients are estimated in the random effect Tobit model. Note that in both Figures, the value of the coefficient in 1991 is 0 – this is a normalization. Intuitively, the figure can be interpreted as illustrating a Golden Age course and a Post-war course, that are both normalized to have the same ranking in 1991. Moving to 1993 and beyond, the "estimate" line illustrates how the rank of the Golden Age course would be expected to improve (decrease) relative to the rank of the Post-war course. So, for example, Figure 1 indicates that by 1999, the rank of the Golden Age course would be expected to be about 20 ranks higher than the Post-war course. Both Figures show a similar and fairly dramatic pattern – there is a very large relative improvement in Golden Age rankings over the sample, but most of that improvement seems to occurred in the first 10 years of the Minimalist movement. Conversely, between 2001 and 2019, there don't appear to be significant changes in the rankings of Golden Age courses relative to Post-War courses. This is interesting for at least two reasons. First, it shows that the Minimalists were able to quite rapidly effect the relative revaluation of Golden Age courses that they desired. Second, this pattern somewhat alleviates concerns about potential biases due course renovations. While we do not have good data on renovations, casual evidence points to a number of high profile renovations of Golden Age courses in recent years.[13] But this is a more recent (i.e. past 10-20 years) phenomena that we think is less likely to have affected the sharp revaluations our econometric model is finding between 1991 and 2001. In any case, as noted earlier, even if part of β_2 is driven by renovations being more frequent on Golden Age courses, that in itself (i.e. renovations being more frequent on Golden Age courses) would also seem supportive of the Minimalist driven revaluation we are hypothesizing.

[13] In fact, these have sometimes been called "restorations" instead of "renovations", consistent with trying to capture and leverage new appreciation for Golden Age architecture.

6. GOLF MAGAZINE

As noted earlier, *Golf Magazine*, traditionally the main competitor of *Golf Digest*, also published golf course rankings. These were first published in 1979, after those of *Golf Digest* started (Cummings (2020)) We have also collected *Golf Magazine* rankings data over the time frame of the Minimalist movement, but there are two important caveats to discuss. First, the structure of *Golf Magazine*'s rating panel is quite different that that of *Golf Digest*. In contrast to *Golf Digest*'s (post-1985) structure of a very large panel open to very wide membership (now in the thousands), *Golf Magazine* has always kept a very small, more hand selected panel of around 100 panelists[14]. Second, starting in 1983, *Golf Magazine* rankings were run by none other than Tom Doak, at that point barely in his 20's. Doak had recently graduated from Cornell University studying golf course architecture (landscape architecture), and according to Cummings (2020) had written to the editor of *Golf Magazine* George Peper in 1981 telling him that "he was going about rating courses all wrong." Apparently impressed, Peper hired Doak to write some freelance architectural articles for the magazine, and then in 1983 asked him to take over management of the rankings, which he did until 1999.

Given that the person in charge of the *Golf Magazine* rankings was also the intellectual leader of the Minimalist movement, especially given the way *Golf Magazine* relied on a small selected set of panelists, our feeling is that the *Golf Digest* rankings provide a more objective test of our hypothesis. Given Doak's strong feelings about what constituted good golf course architecture, it is not hard to imagine the composition of his set of panelists evolving in a similar direction over time. So one could even see differential trends in rankings if views of individual panelists themselves were not changing.[15] In any case, we replicate all the previous analyses for *Golf Magazine* in Table 2 and Figures 3 and 4. Interestingly, the estimates and patterns are very similar to those of *Golf Digest*. The favorable trend in rankings towards Golden Age courses as measured by β_2 is somewhat higher in the *Golf Magazine* specifications, but in what are arguably the preferable Tobit specifications, the difference is only about 10% and small relative to standard errors.

[14] Another difference is that *Golf Magazine* has raters give overall ratings to a course, rather than giving ratings for each of a set of criteria.

[15] This is not to allege any impropriety as it is natural to have an affinity to others with similar viewpoints. Doak was also careful to avoid direct conflicts of interest, which is why he left in 1999 as his career as an architect was blossoming (Goodwin (2006, pp. 214-215)).

7. CONCLUSIONS

Much research by major social scientists cited in this paper has been devoted to developing models of the structure of the process of creative innovation and the adoption and propagation of its products in the marketplace. This marketplace is largely one of ideas, and the competition that exists among creative workers is that of competing ideas as to what are the best directions for a particular field to take. A structure of rules by which this process occurs includes various forms of incentives and disincentives which each member of a field must navigate in order to be successful in having his or her ideas accepted by the field's various actors (other creators, critics, journalists, dealers, patrons, customers, the general public, etc.), and thus to continue to be active in one's chosen field throughout an entire career. We have obtained rigorous and statistical empirical evidence in this paper of the successful effects of a tactic, the "grandfather" or "leapfrog" strategy, that has been observed to exist in many different creative fields at many different time periods. We are not aware of any previous instances where such an analysis has been performed for any artistic field. Besides establishing that the golf course architecture field behaves according to Bourdieu's (1996) famous *Rules of Art*, we have been able to utilize the uniquely measurable information on expert judgment as contained in magazine golf course rankings to carry out or statistical study.

We would advise the reader against inferring any underlying hypothesis in this study as to the subjective experience and motivations of architects, and other artists generally. Our study has been couched within a social scientific analysis in which individuals act within certain structures and behave according to the rules and incentives required by those structures in order to succeed in being recognized by their peers. All creative workers need this recognition and have to take certain measures to obtain it. None of this is inconsistent with the hypothesis that creative workers are truly passionate about their work and sincerely believe that their ideas are valid and important and truly deserving of recognition. We should not be misunderstood as suggesting that the strategies that all creative workers must adopt to attract attention to their work indicates the presence of any degree of cynicism or dishonesty. Indeed, it seems to us that the passionate and genuine interest in what they are doing is what motivates the best creative workers to strive so hard to successfully advance their ideas. But a proper analysis of this question is in the domain of the psychologists and outside of whatever competence the authors of the present paper may possess.

APPENDIX: CRITERIA USED FOR THE *GOLF DIGEST TOP 100* RANKINGS (Source: https://www.golfdigest.com/story/how-our-panel-ranks-the-courses)

SHOT OPTIONS
How well does the course present a variety of options involving risks and rewards and require a wide range of shots?

CHALLENGE
How challenging, while still being fair, is the course for a typical scratch golfer playing from the tees designated as back tees for everyday play (not from seldom-used championship tees)?

LAYOUT VARIETY
How varied is the physical layout of the course in terms of differing lengths (long, medium and short par 3s, 4s and 5s), configurations (straight holes, doglegs left and right), hazard placements, green shapes and green contours?

DISTINCTIVENESS
How individual is each hole when compared to all others on this course?

AESTHETICS
How well do the scenic values of the course add to the pleasure of a round?

CONDITIONING
How firm, fast and rolling were the fairways, how firm yet receptive were the greens and how true were the roll of putts on the day you played the course?

CHARACTER
How well does the course design exude ingenuity and uniqueness and possess profound characteristics that you would consider outstanding for its era?

FUN
How enjoyable for all levels of golfers would this course be to play on a regular basis?

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Table 1 - Golf Digest

	1	2	3	4	5	6	7	8	9	10	11	12
	Baseline	Pete Dye Dummy	Unranked set to 101	Unranked set to 140	Fixed Effect Tobit	Rand. Eff. Tobit	Never in Top 20	Never in Top 40	Built bef. 1980	Built bef. 1970	Sqrt(Rank)	Squared Terms
Num. of Courses	110	110	110	110	110	110	82	56	101	94	110	110
Num. of Obs.	1650	1650	1650	1650	1650	1650	1230	840	1515	1410	1650	1650
Year	1.0547	1.1756	0.7006	1.6756	1.6336	1.6670	1.2222	1.2461	1.2258	1.3166	0.0627	2.5377
	(0.1905)	(0.1880)	(0.1304)	(0.2549)	(0.3007)	(0.3102)	(0.1960)	(0.2066)	(0.2062)	(0.2273)	(0.0101)	(0.5908)
Year*I(GoldenAge)	-0.6698	-0.7907	-0.3682	-1.2355	-1.2215	-1.3310	-0.6622	-1.1578	-0.8409	-0.9317	-0.0368	-2.6515
	(0.2642)	(0.2625)	(0.1954)	(0.3416)	(0.3598)	(0.3724)	(0.3204)	(0.3207)	(0.2758)	(0.2920)	(0.0155)	(0.7658)
Year*I(Pete Dye)	-	-0.6179	-0.2673	-0.9869	-1.0644	-1.1168	-0.6645	-1.0216	-0.3615	-0.0797	-0.0302	1.1361
		(0.5932)	(0.4368)	(0.7615)	(0.6292)	(0.6702)	(0.5967)	(1.0378)	(0.4519)	(0.5848)	(0.0329)	(1.9057)
$Year^2$	-	-	-	-	-	-	-	-	-	-	-	-0.0341
												(0.0139)
$Year^2$*I(GoldenAge)	-	-	-	-	-	-	-	-	-	-	-	0.0465
												(0.0178)
$Year^2$*I(Pete Dye)	-	-	-	-	-	-	-	-	-	-	-	-0.0438
												(0.0466)
R^2	0.1229	0.1285	0.0941	0.1458	NA	NA	0.1569	0.1910	0.1368	0.1469	0.1122	0.1413

Table 2 - Golf Magazine

	1	2	3	4	5	6	7	8	9	10	11	12
	Baseline	Pete Dye Dummy	Unranked set to 101	Unranked set to 140	Fixed Effect Tobit	Rand. Eff. Tobit	Never in Top 20	Never in Top 40	Built bef. 1980	Built bef. 1970	Sqrt(Rank)	Squared Terms
Num. of Courses	121	121	121	121	121	121	95	74	115	109	121	121
Num. of Obs.	1694	1694	1694	1694	1694	1694	1330	1036	1610	1526	1694	1694
Year	1.1019	1.0745	0.6886	1.4807	-1.3745	1.4129	1.0933	0.9036	1.0307	0.7646	0.0585	3.8588
	(0.2191)	(0.2548)	(0.1701)	(0.3507)	(0.3665)	(0.3982)	(0.2636)	(0.2442)	(0.2597)	(0.2418)	(0.0138)	(0.9969)
Year*I(GoldenAge)	-1.1525	-1.1252	-0.6857	-1.5878	-1.4098	-1.4505	-1.1475	-1.1076	-1.0814	-0.8153	-0.0590	-3.9565
	(0.2651)	(0.2953)	(0.2027)	(0.4014)	(0.3957)	(0.4355)	(0.3333)	(0.3312)	(0.2996)	(0.2842)	(0.0164)	(1.1083)
Year*I(Pete Dye)	-	0.1155	0.2508	-0.0270	-0.1359	-0.1681	0.1339	0.3437	0.0565	0.2094	0.0139	-3.5467
		(0.4958)	(0.3746)	(0.6365)	(0.5678)	(0.5803)	(0.5454)	(0.6471)	(0.6194)	(0.2530)	(0.0285)	-1.9429
$Year^2$	-	-	-	-	-	-	-	-	-	-	-	-0.0733
												(0.0217)
$Year^2$*I(GoldenAge)	-	-	-	-	-	-	-	-	-	-	-	0.0745
												(0.0246)
$Year^2$*I(Pete Dye)	-	-	-	-	-	-	-	-	-	-	-	0.0964
												(0.0438)
R^2	0.1004	0.1006	0.0917	0.0997	NA	NA	0.1025	0.0886	0.0822	0.0451	0.0994	0.1184

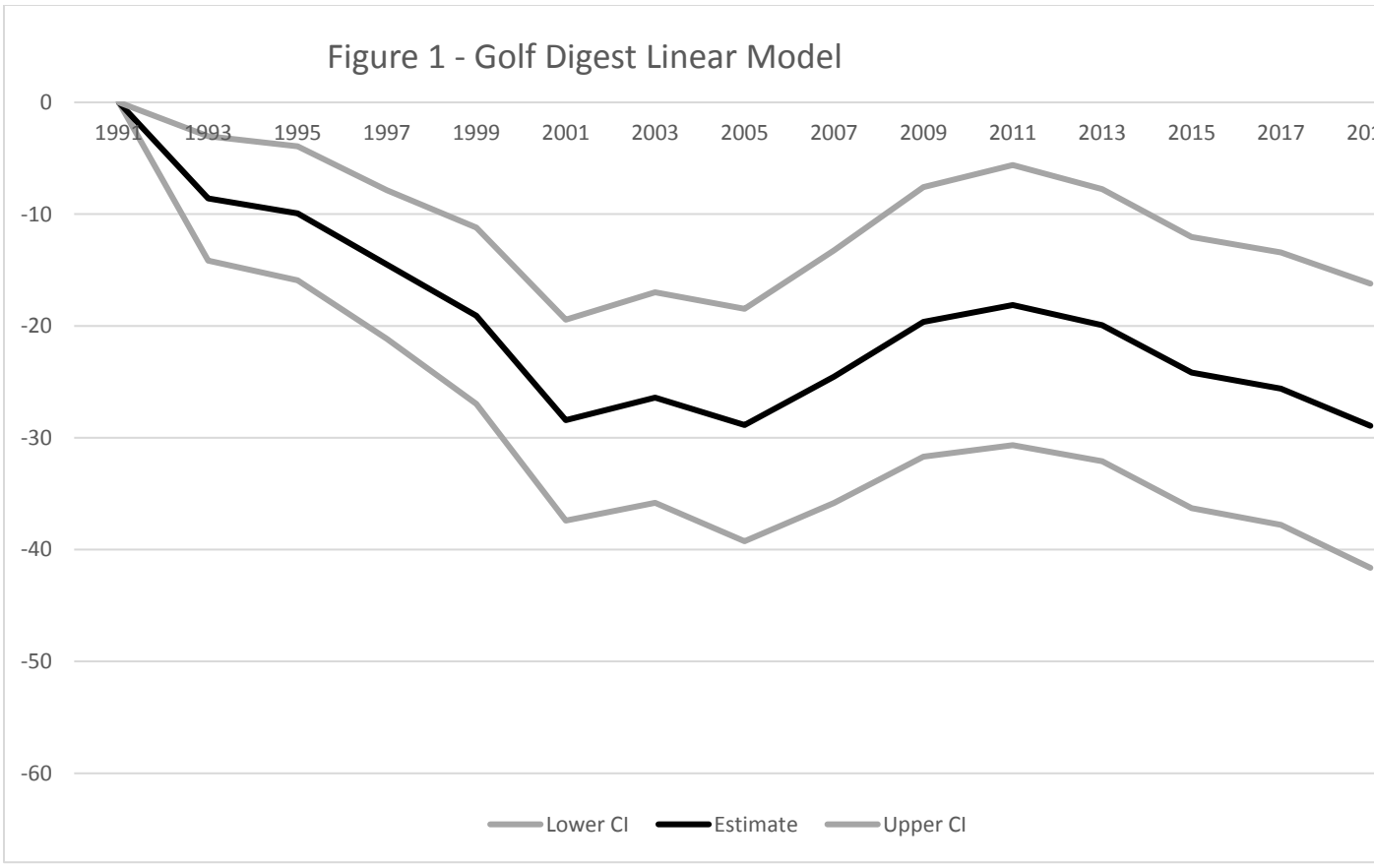
Figure 1 - Golf Digest Linear Model
0
-10
-20
-30
-40
-50
-60
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
Lower CI
Estimate
Upper CI

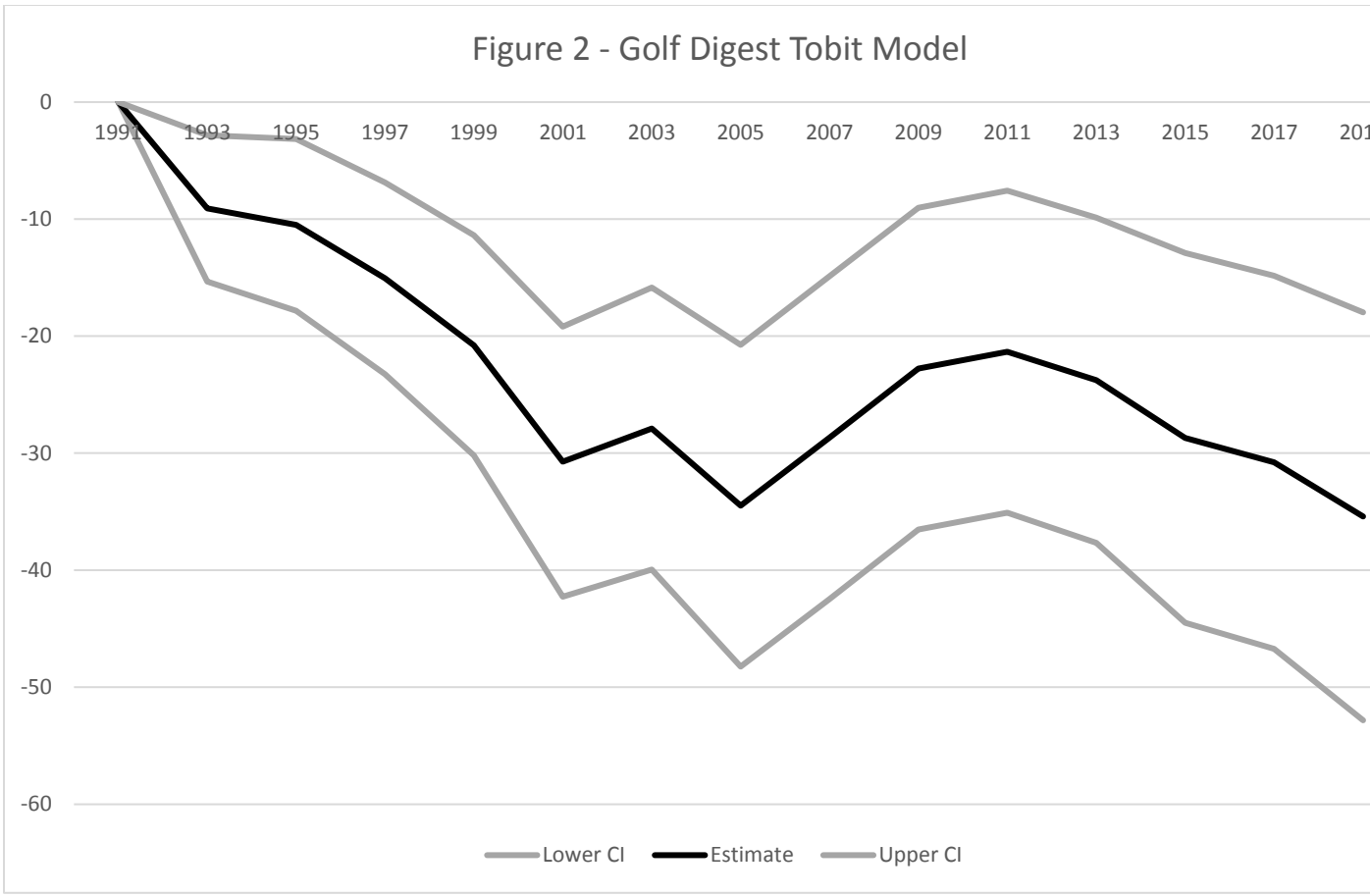
Figure 2 - Golf Digest Tobit Model
0
-10
-20
-30
-40
-50
-60
1991
1993
1995
1997
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2001
2003
2005
2007
2009
2011
2013
2015
2017
Lower CI
Estimate
Upper CI

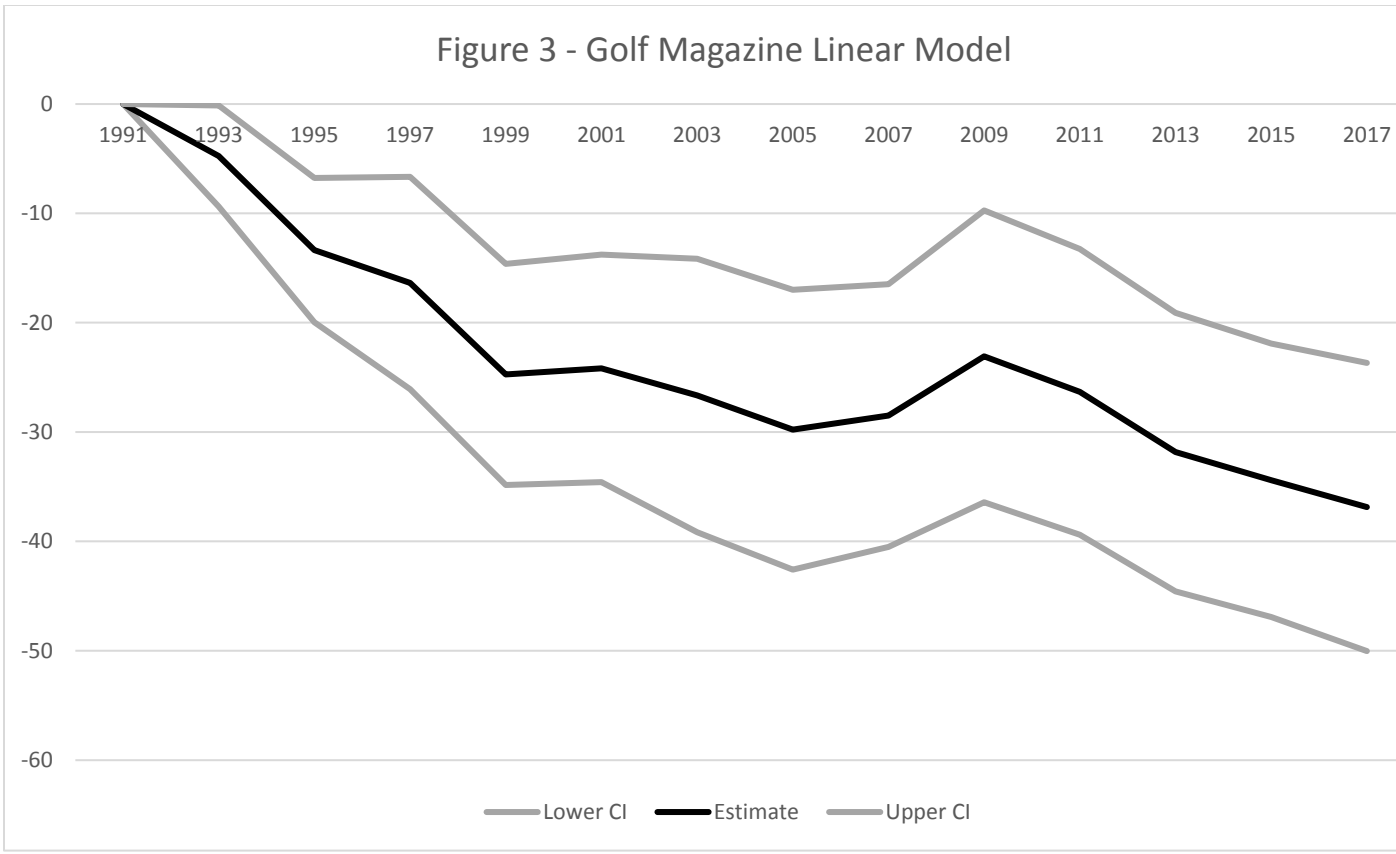
Figure 3 - Golf Magazine Linear Model
0
-10
-20
-30
-40
-50
-60
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
Lower CI
Estimate
Upper CI

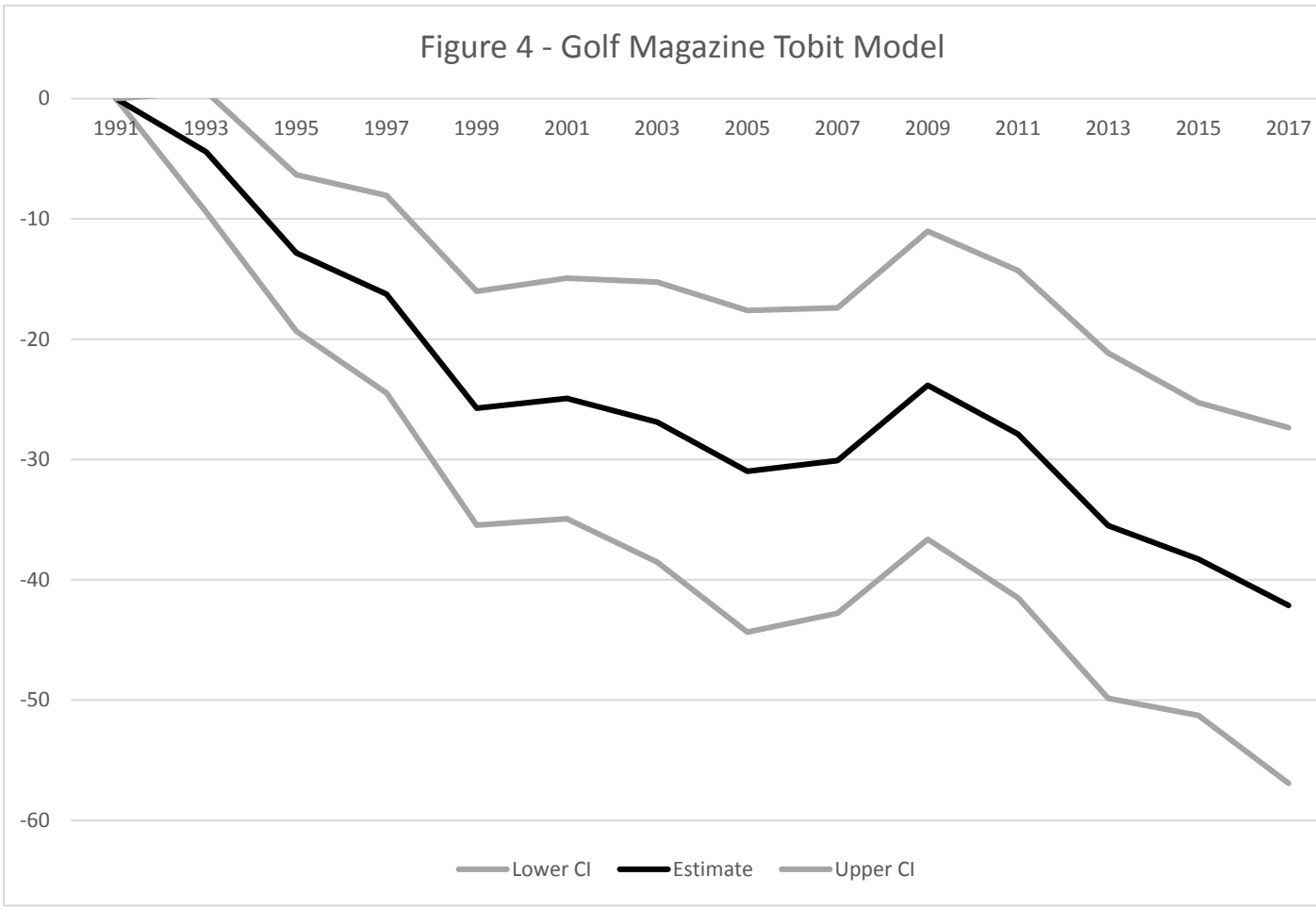
Figure 4 - Golf Magazine Tobit Model
0
-10
-20
-30
-40
-50
-60
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
Lower CI
Estimate
Upper CI