The Relative Returns to Skill of PGA and LPGA Players

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I. Abstract

This study identifies differences between the returns to skill for 50 PGA and 50 LPGA Tour golfers using a cross-sectional model. Our measure of returns to skill is a normalized earnings figure given by the total earnings for a golfer during the year divided by the sum of their earning potential. We estimate the returns to skill as a function of driving accuracy, driving distance, putting average, greens in regulation, number of events played, majors played, slope rating, and a dummy variable for gender. We find that the same skills are important for both PGA and LPGA golfers but to varying degrees. We conclude that putting and greens in regulation are the most important variables explaining winning percentage, but these skills are both relatively less important for LPGA players than for PGA players. We also find that driving accuracy is important in explaining winning percentage, and that the importance of this variable is the same for PGA and LPGA players. Our results can be used by golfers to focus their practice time on the skills that may affect their return.

II. Empirical Model and Variables

$WIN_i = f(DIST_i, ACC_i, GIR1_i, PUTT1_i, EVENTS_i, MAJORS_i, SAND1_i, SLOPE_i, G_i, DIST*G_i, ACC*G_i, EVENTS*G_i, GIR*G_i, MAJORS*G_i, PUTT1*G_i, SAND1*G_i, SLOPE*G_i)$

WIN_i = Winning percentage for the ith player in 2012

$DIST_i$ = Average driving distance for the ith player for 2012

ACC_i = Driving accuracy for the ith player in 2012

$PUTT1_i$ = Putting average for the ith player in 2012

$GIR1_i$ = Percent of greens hit in regulation for the ith player in 2012

$EVENTS_i$ = Number of events played in during the 2012 season

$MAJORS_i$ = Number of majors played in during the 2012 season

$SAND1_i$ = Sand saves of the ith player in 2012

$SLOPE_i$ = Average slope rating for the ith player for 2012

G_i = Dummy variable for gender

*i denotes player where i = 1-100

III. Theory and Hypotheses

We specify player's winning percentage as a function of the following variables:

$DIST_i$ is hypothesized to have a positive relationship with WIN_i because when a player is able to hit the ball further off the tee, their next shot is closer to the hole, making it easier to score well

ACC_i is hypothesized to have a positive relationship with WIN_i because the more often a player hits the ball into the fairway versus the rough off the tee, the greater opportunity they have to hit a more precise shot onto the green

$PUTT1_i$ is hypothesized to have a negative relationship with WIN_i because the lower amount of putts a player has during a round the lower their score will be, increasing their winning percentage

$GIR1_i$ is hypothesized to have a positive relationship with WIN_i because by hitting the green a player has a greater opportunity to one putt, lowering their score and increasing winning percentage

$EVENTS_i$ could either have a positive or negative relationship with WIN_i depending on the effect of playing in more tournaments

$MAJORS_i$ could either have a positive or negative relationship with WIN_i depending on the effect of playing in more majors

$SAND_i$ is hypothesized to have a positive relationship with WIN_i because if a player is better at getting out of the sand and saving their par, a player will have a lower score and increase winning percentage

$SLOPE1_i$ is hypothesized to have a negative relationship with WIN_i because the higher the average slope rating for a given individual, the more challenging the courses they are playing on, making it more difficult to win, decreasing winning percentage

G_i is our dummy variable for gender. We test for any differences in the returns to specific skills of PGA and LPGA Tour players by including a dummy variable. The dummy variable has a value of 1 if the player is on the LPGA Tour and 0 if the player is on the PGA Tour

IV. Data

Cross-sectional data set of 50 PGA and 50 LPGA Tour Players
Sample size: 100

Data Challenges and Limitations:

- Slope rating data set:
  - USGA reports on course and slope ratings
  - Some courses were not reported on
  - Slope ratings may not have been the accurate rating for the specific tournament or tee box
- Sample selection: some players did not have complete statistics listed

Data Sources:

- Most data came from the PGA Tour website and LPGA website
- Most slope ratings were found on the USGA Course Rating and Slope Database
- LPGA first place prize came from the YAHOO! Sports LPGA Leaderboard
- Other slope ratings came from:
  - Golf Digest
  - World Golf
  - Golf Australia

V. Empirical Results

Dependent Variable: WIN
Method: Least Squares
Sample: 1 100
Included observations: 100
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 5.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.100202	0.263717	-0.379960	0.7050
ACC	0.278928	0.123908	2.251095	0.0271
DIST	0.000418	0.000547	0.764782	0.4466
EVENTS	-0.001170	0.001101	-1.063381	0.2907
G	-0.206867	0.363239	-0.569506	0.5706
GIR1	0.982439	0.229713	4.276801	0.0001
MAJORS	0.009421	0.001499	6.283345	0.0000
PUTT1	-1.048760	0.126321	-8.302345	0.0000
SAND1	0.076933	0.059174	1.300112	0.1972
SLOPE	-0.001049	0.001421	-0.737766	0.4628
G*ACC	-0.030077	0.155893	-0.192932	0.8475
G*DIST	-0.000372	0.000802	-0.463500	0.6442
G*EVENTS	0.003005	0.003343	0.898702	0.3714
G*GIR1	-0.515160	0.290587	-1.772827	0.0800
G*MAJORS	-0.009835	0.011125	-0.884086	0.3792
G*PUTT1	0.595596	0.209310	2.845520	0.0056
G*SAND1	-0.078392	0.096998	-0.808177	0.4213
G*SLOPE	0.002223	0.001868	1.190195	0.2374

R-squared	0.559166	Mean dependent var	0.058680
Adjusted R-squared	0.467773	S.D. dependent var	0.058730

VI. Conclusions

- Our adjusted R-squared indicates 46.7% of the variation in winning percentage is explained by our model
- Putting average is statistically significant in explaining winning percentage for both PGA and LPGA players, but to a lesser degree for LPGA players than PGA players
- Greens in regulation is statistically significant in explaining winning percentage for both PGA and LPGA players, but to a lesser degree for LPGA players than PGA players
- Driving accuracy is statistically significant in explaining winning percentage for both PGA and LPGA players and has the same effect on men and women
- Majors participated in is statistically significant in explaining winning percentage for both PGA and LPGA players and has the same effect on men and women
- Our results can be used by golfers to focus their practice time on the skills that may increase their return