

Identifying Online Professional Poker Players: A Revealed and Stated Analysis Approach

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ABSTRACT

This two-part paper is intended to explore the task of differentiating a professional gambler from a leisure gambler, specifically, among online poker players. The first part of the study consists of a statistical analysis to identify the requisite number of hands of online poker required to identify winning players, that is, players who should expect to show a profit during a given year. The second part of the study involves administering a survey that assesses players' perceptions of whether they consider their own play to be that of a winning player. An investigation will be conducted as to whether players that should have identified themselves as professionals did identify themselves and claim their winnings as taxable income. If there is a large divergence in normative and positive behavior between these two approaches, then this may indicate that the current tax policy institutions are failing and need revisions.

Keywords: *poker, policy, online, gambling, tax, survey*

INTRODUCTION

This two-part research approach is intended to differentiate a professional gambler from a leisure gambler, specifically among online poker players, for application in Canadian taxation practices. The first part of the study consists of a statistical analysis to identify the requisite number of hands of online poker required to identify players who should expect to show a profit during a given year. The second part of the study involves administering a survey that assesses players' perceptions of whether they consider their own play to be that of a winning player. An investigation will then determine whether players that should have identified themselves as professionals (according to the secondary data analysis) did in fact identify themselves and claim their winnings as taxable income.

Academic Significance

Many studies have sought to identify poker as either a game of skill or chance, but none have identified which metrics would be useful in identifying when skill, rather than luck, becomes the predominate aspect of the game in determining winning players. The ability to

identify winning professional players would provide a strong foundation for further study of Internet gamblers, such as risk-taking behaviors and social activities, by establishing a precedent for a test group to compare to a control.

Practical Significance

In many countries, poker is considered a game of chance and is regulated as such. In Canada, the policy for taxation of winnings from gambling is ambiguous in many cases. Established case law has allowed winnings to go untaxed, provided that the player did not have a reasonable expectation of profit. The Canada Revenue Agency (CRA) has established that in order for any activity or pursuit to be regarded as a source of income, there must be a reasonable expectation of profit (Canada Revenue Agency, 1992). The criteria established by the CRA leaves much ambiguity to the individual in deciding whether or not to declare poker winnings as taxable income.

LITERATURE REVIEW

Games of Skill vs. Chance

Due to a legal distinction in many jurisdictions pertaining to the wagering on games of chance vs. games of skill, there is a significant body of research on classifying poker as one or the other. An analysis of 100 million hands of online poker (Hope & McCulloch, 2009) revealed that the outcome of games were largely determined by players' decisions, rather than by the cards dealt. Games of mixed skill and chance are typically exempted from Canadian law if they are part of commercial promotional activities and have provisions for free entry (Goldstein, Egleson, & Eisenman, 2010).

Dreef, Borm, & Van der Genugten (2004) created a metric to measure the skill level of a game using Nash equilibria to illustrate the differences that a beginner strategy and an expert strategy can have on win rate in coin toss and draw poker examples. Alon (2007) designed a theoretical mathematical model to show that skill's significance in winning increases dramatically as the number of hands played grows.

Prevalence of Online Gambling

Wood and Williams (2009) found that 70.7% of Canadians gamble, and 2.1% engage in Internet gambling, not including use of the Internet for stocks and day trading. The authors further found that skill games, including poker, were the most popular form of online gambling in Canada, at 59.7% (Wood & Williams, 2009).

Legality and Taxation of Gambling Winnings

In Canada, personal winnings from gambling are untaxed, provided that the player did not have a reasonable expectation of profit. In the case of a brick and mortar poker player (Epel v. the Queen, 2004), the district tax court ruled that Epel’s increase in net worth was, on the balance of probabilities, attributed to winnings from casual gaming, and not from the business of gambling. A recent precedent for the establishment of a professional vs. amateur gambler came in the case of a billiards player that would methodically play inebriated opponents while sober (Luprypa v. The Queen, 1997). The court ruled that he was a skilled player who carefully managed his risk, and won the majority of the time. In the case of Graham v. Green (1925), the court decided in the favor of a frequent winning horse bettor, deciding that frequency of bets was not sufficient to determine income; organization was also a necessary criteria. This ruling differed from the systematic betting and attending of races by Walker (Walker v. M.N.R. 1951), where the court ruled in favor of the appellant.

METHODOLOGY

This study involves a statistical analysis of secondary data to reveal which players could be considered to have a statistically significant advantage over the general field, and a survey-based approach to examine which players have an intrinsic view of their own perceived advantage. An outline of the proposed methods is illustrated in Figure 1.

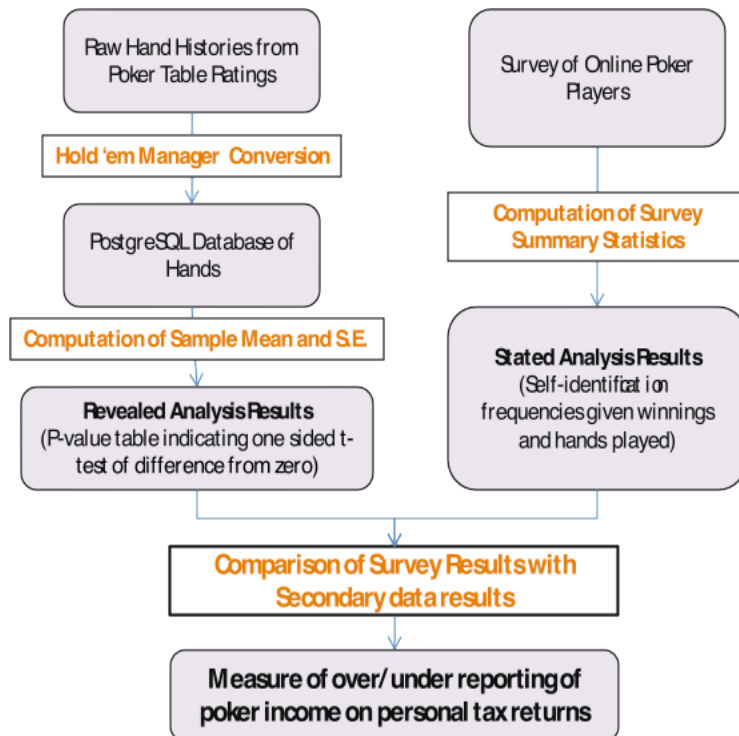


Figure 1. Illustration of Proposed Methods

Revealed Analysis of Play

100 million hands of poker will be reviewed, to be purchased from the third party site, pokertableratings.com. The data will be selected as a random sample of hands from 2009, the same tax year that will be used for the survey. All play will be observed at the Pokerstars.com online poker room. The initial focus will be on No Limit Texas Hold ‘Em, which is widely considered to be the most popular form of poker in the world.

Using the standard error of sample mean winnings, a p-value table will be computed to indicate one sided t-test of difference from zero. A sample p-value table is provided in Figure 2. The top row denotes the given player’s annual earnings, and the left column denotes the player’s number of hands played. By referencing the corresponding p-value, users may estimate the probability that the winnings were not greater than zero.

Number of Hands Played in 2009	Total Earnings in 2009								
	\$5,000	\$10,000	\$15,000	\$20,000	\$25,000	\$30,000	\$35,000	\$40,000	...
10,000	0.40	0.38	0.36	0.34	0.33	0.31	0.29	0.28	...
20,000	0.38	0.36	0.34	0.33	0.31	0.29	0.28	0.27	...
30,000	0.36	0.34	0.33	0.31	0.29	0.28	0.27	0.25	...
40,000	0.34	0.33	0.31	0.29	0.28	0.27	0.25	0.24	...
50,000	0.33	0.31	0.29	0.28	0.27	0.25	0.24	0.23	...
60,000	0.31	0.29	0.28	0.27	0.25	0.24	0.23	0.22	...
70,000	0.29	0.28	0.27	0.25	0.24	0.23	0.22	0.21	...
80,000	0.28	0.27	0.25	0.24	0.23	0.22	0.21	0.20	...
90,000	0.27	0.25	0.24	0.23	0.22	0.21	0.20	0.19	...
100,000	0.25	0.24	0.23	0.22	0.21	0.20	0.19	0.18	...
110,000	0.24	0.23	0.22	0.21	0.20	0.19	0.18	0.17	...
120,000	0.23	0.22	0.21	0.20	0.19	0.18	0.17	0.16	...
130,000	0.22	0.21	0.20	0.19	0.18	0.17	0.16	0.15	...
140,000	0.21	0.20	0.19	0.18	0.17	0.16	0.15	0.14	...
150,000	0.20	0.19	0.18	0.17	0.16	0.15	0.14	0.14	...
160,000	0.19	0.18	0.17	0.16	0.15	0.14	0.14	0.13	...
170,000	0.18	0.17	0.16	0.15	0.14	0.14	0.13	0.12	...
...

Figure 2. Sample P-Value Table

Stated Analysis of Play

A survey will be administered that seeks to identify how players view their own status as a professional or recreational poker player. The survey will also identify if winnings are claimed on the individuals’ income tax returns, the amount of those winnings, and the number of hands played. The survey will be internet based, and provided through a link on the twoplustwo.com forums. It is unlikely that a recreational player, unaware of resources like the twoplustwo.com forums, would classify himself as a professional player. Therefore, it seems reasonable to focus the attention of the survey on players with an active interest in the poker community. Since the

largest potential source of inefficiency in the current system is long-run winning players classifying themselves as recreation players, this survey administration approach should yield the data that is considered important from a policy perspective.

Combined Results of Revealed and Stated Analysis

Once the summary statistics from the survey data have been computed, players that should have identified themselves as professionals (according to the secondary data analysis) will be compared to the player pool that did identify themselves (via the survey). If there is a large divergence in normative and positive between these two approaches, then this may indicate that the current tax policy institutions are failing and need revisions for this sub-group of professional gamblers.

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