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**EDP 02/2010**

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sports betting markets**

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# **A microeconomic analysis of participation in sports betting markets**

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This draft: February 2010

## **Abstract**

Currently, a number of proposed changes in the opportunity to bet on sport are being debated in the US and the EU. We examine the characteristics of sports bettors in three countries, Canada, Spain, and the UK, to determine who bets on sports in environments where this activity is both legal and popular. Our evidence is based on recent large scale surveys of consumers' participation in gambling markets in each country. Unconditional and conditional analyses of sports bettors find that annual participation rates in sport betting are low, and that sport bettors tend to be young males with relatively high incomes. Our scoreboard indicates that sports bettors stand to gain the most in both areas, while the negative impacts of increased access to sports betting is minimal in the US and difficult to assess in the EU.

JEL Codes: D12, K29, K42, L83

Keywords : Sport betting, gambling, regulation

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## **Introduction**

Gambling on sporting events occupies a curious position in the economy. Some form of legal sports betting exists in almost every part of the world, and anecdotal evidence indicates widespread informal betting on sports. Significant demand for sports betting among consumers clearly exists. While betting on informal athletic events like footraces could exist in the absence of organized sporting events, the existence of a large number of highly organized team sports leagues and individual sports associations enhances betting opportunities. Yet most professional and amateur sports organizations and associations actively oppose any form of betting on the events that they organize. For example, in the United States, the National Intercollegiate Athletic Association's (NCAA) official policy is to oppose all forms of legal and illegal betting on sports; the National Football League (NFL) formally opposed the recent legalization of sports betting in Delaware. Professional and amateur sports organizations typically cite the corrupting influence of sports betting on athletes and events when opposing sports betting.

Governments hold divergent positions on sports betting. Legal sports betting exists in four US states: Nevada, Oregon, Montana and Delaware. However, the US government passed a law, the Professional and Amateur Sports Protection Act (PASPA), in 1992 that explicitly outlaws sports betting in all but these four states. Many other countries either allow sports betting or actively encourage sports betting by operating nationwide monopoly sports betting operations, often in conjunction with national lotteries. In general, governments appear to trade off the negative aspects of sports betting and the revenues that can be gained by regulating and taxing this activity.

Several recent events related to the supply of sports betting opportunities motivate this paper. In 2005 the Oregon legislature voted to eliminate a long-running sports betting game operated by the Oregon Lottery, Sports Action. This sports betting game was quite profitable, earning about \$12 million in its final year of operation, but was eliminated because of continuing pressure from the NCAA, which threatened to ban Oregon from hosting NCAA postseason events if it did not eliminate this game. In June 2009 the state of Delaware passed a law making sports betting legal in the state. Some form of sports betting, either Nevada-style bookmaking or an Oregon-style lottery based sports betting game will soon be available in Delaware. Immediately following the legalization of sports betting in Delaware, the governor of neighboring New Jersey announced an initiative to legalize sports betting in that state, citing the potential for sports betting in Delaware to reduce gambling revenues in New Jersey. Also in 2009, the state of Montana announced that it would expand its current NASCAR-based sports betting game to NFL games at the start of the upcoming football season. In Europe, the European Union has been taking aggressive actions to eliminate state-run monopoly sports betting operations in EU countries in order to open up domestic sports betting to more competition. This change opens up the possibility of legal internet sports betting as well as widespread sports book making like what currently exists in the UK in all countries in the EU. France is already crafting new gambling regulations in response to EU rulings and the EU has sent requests for details on current gambling regulations to Germany and Sweden.

Finally, the growing availability of internet sports betting sites calls into question the ability of governments to regulate sports betting. The US passed a law making transactions between US financial institutions like banks and credit card companies an

on-line gambling sites illegal. Following the passage of this regulation, a number of prominent on-line gambling operators like Bwin and Sportingbet ceased commercial transactions with US customers. However, internet gambling continues to expand, especially in the EU, and there have been continuing calls for repeal of this US law. As internet sports betting opportunities expand, it will be increasingly difficult to regulate sports betting around the world.

All these events affect sports bettors in some way. In addition, the current ban on sports betting in the US, outside of Nevada, Delaware, and Nevada, has an impact on people who would like to bet on sports but cannot in the current regulatory environment. Since the ultimate cost of sports betting regulation falls on bettors, we examine the characteristics of sports bettors in three countries, Canada, Spain, and the UK, where sports betting is legal and widely available. We focus on these three countries because surveys of sports bettors have recently been conducted there, we have access to these surveys, and the questions asked in these surveys are relatively comparable. This allows us to develop evidence about sports bettors in these three countries and compare the characteristics of sports bettors across the countries. We also discuss the current availability of sports betting in the US and develop some evidence about the characteristics of US sports bettors.

Improved understanding of the characteristics of sports bettors will help policy makers understand the likely consequences of changes in existing sports betting regulations and enhance understanding of the costs and benefits of existing sports betting regulations.

### **The Availability of Legal Sports Betting**

The availability of sports betting in any economy depends on both the regulations put in place by the government and the willingness of some individuals to violate these regulations. Simmons (2008) provides a thorough analysis of the factors that influence the amount of regulation placed on gambling opportunities. Simmons (2008) stresses the inherent tension between consumers who view gambling as entertainment and governments who view state sponsored monopoly gambling industries as an important source of revenue as an important determinant of the amount of gambling available in an economy.

Sauer (2001) explains the regulation and availability of gambling in the context of a public choice model. In this model, governments set regulations in response to lobbying by interest groups, and society contains a pro-gambling component whose welfare rises with gambling availability and falls with gambling regulation and an anti-gambling group which wants to restrict gambling opportunities. The anti-gambling group contains individuals and organizations like churches that dislike gambling for a number of reasons. In the case of sports betting, this group can also contain professional and amateur sports organizations like the NCAA. The Gambling regulations that emerge from this model are a function of the relative effort that the two groups place on lobbying. Simmons (2008) points out that this model cannot be applied to settings where significant gambling opportunities already exist.

Forrest and Simmons (2003) thoroughly analyze the economic and public policy context of sports betting. They document the rapid growth in sports betting and discuss the potential for this increase to generate revenues for both governments and sports

organizations. Forrest and Simmons (2003) also discuss negative aspects of sports betting, including the incentives for corruption it generates. Forrest and Simmons (2003) emphasize the symbiotic nature of the relationship between sport and sports betting and point out the importance of complementarities between sport spectating and sports betting as well as the tensions generated by this symbiotic relationship. The importance of complementarities in consumption drives demand for sports betting and puts pressure on governments to expand sports betting opportunities while the corruptive factors fuel the desires of anti-sports gambling groups and leads to increased pressure to restrict sports betting opportunities.

García and Rodríguez (2007) and García, Pérez and Rodríguez (2008) demonstrate the existence of important complementarities between sport spectating and sports betting in Spain. Although no formal evidence of such complementarities exists in other countries, we assume that they exist in Canada and the UK.

All of the factors described above are at work to some extent in the three sports betting markets we examine in this paper. Clearly, the sports betting market in the US is in a state of transition, with important increases and decreases in sports betting opportunities occurring frequently across the country. Below, we describe the sports betting opportunities that exist in the three countries we have detailed data on sports betting market participation for, Canada, Spain, and the UK, and also describe the current sports betting opportunities in the US.

#### *Sports Betting in Canada*

Canadians can bet on sporting events through a group of lottery based games referred to collectively as Sports Select. Sport Select includes a number of similar sports betting lottery games offered by groups of Canadian provinces. The games included under the Sports Select umbrella include Pari sportif, Pro-Line, and Sports Action. In some provinces in Western Canada, Point Spread, a lottery based game featuring bets against point spreads is also offered. All of these sports lottery tickets can be purchased at lottery outlets across Canada. In some provinces, Sports Select tickets can be purchased on the internet. The Sports Line games, with the exception of Point Spread, are all based on fixed odds bets on outcomes and totals in professional and amateur sporting events, including games in the major North American sports leagues, US college football and basketball games, and PGA tour tournaments. The Sports Select games are parlay games where bettors must pick the outcome of between two and twelve sports events.

Payouts in Sports Select are not pari-mutuel. Instead, the lottery corporations make profits based on overround, the amount by which the win probabilities implied by the fixed odds offered on specific outcomes exceed 100. The overround on Sports Select bets varies depending on the number of events selected. The minimum overround is 160%, and it can be over 300% depending on the exact set of events selected. Payouts are capped at \$2,000,000 per card no matter how large the odds on the selected events.

#### *Sports Betting in Spain*

The Spanish State Lotteries and Gaming, a government organisation reporting to the Ministry of Economy and Finance via the Secretariat of State for Finance and Budgets, controls all legal sports betting in Spain. Sport betting consists of pools and other competitions for forecasting the results of sports events. Despite Spain's enthusiasm for

football, legal sports betting is largely limited to people gambling on the outcome of professional football matches through football pools. However, several bookmakers were awarded the first licences to operate sports betting in both the Basque Country and Madrid at the beginning of 2008, opening up a completely new sports betting market. Other legal forms of sport betting in Spain include horse and dog racetrack betting and gambling on the Basque ball game jai-alai. We examine only football pools because of a lack of data on other types of sport betting and the size of these markets relative to football pools.

Football pools (*La Quiniela*) were introduced in Spain in the 1946-47 season and they have long occupied an important place in the Spanish gambling market. In 2006 *La Quiniela* turnover (total sales) was over €480m, about €10.9 per inhabitant. Furthermore, the exceptional importance of this gambling industry in Spain lies in the scope of its economic and social benefits; generally speaking, the funds obtained have the objective of promoting sports activities. A Spanish Royal Decree of February 20, 1998, established the current distribution of football pools revenues. The Spanish Professional Football League (*LFP*) receives 10%, the National Council of Sports gets 1%, and 10.98% goes to the provincial governments in order to promote social activities and sport facilities. The Public Exchequer takes in 23% of total revenues, once the administration and distribution expenses have been discounted. The takeout rate on football pools is 45%, and payouts are pari-mutuel.

This state-operated football pools is managed by a public institution, Loterías y Apuestas del Estado (LAE), which is also responsible for operating the National Lottery (a passive lottery game), several high payout, low odds lotto games and some lottery-type games related to horse racing. Tickets cost €05 and they can be bought at any of the local state lottery shops widely available throughout Spain. Each bet is composed of 15 matches corresponding, in general, to Spanish First and Second Division teams. Players have the possibility of choosing the final result of each match from among three alternatives: home win (1), draw (X) and away win (2). To win the maximum prize players must correctly guess the results of all 15 matches included in the coupon. Lower prizes are awarded to those correctly guessing 10, 11, 12, 13 or 14 results. There are facilities on the form for multiple forecasts, but this may be complicated and is expensive. If the main prize is not won, it is rolled over to the following week.

*La Quiniela* is only offered during the Spanish football season, unlike the UK where Australian games are included in football pools in summer. Players can ask for a lucky dip, but there is a 2 column minimum entry fee of €1 for this bet. It is usual for large groups of bettors (*peñas*) to bet on football pools.

#### *Sports Betting in the United Kingdom*

The UK has among the most developed sports betting markets in the world. Bookmaking is a legal, regulated industry in the UK and prominent private bookmakers like Ladbrokes and Betfred operate hundreds of betting shops across the UK where bettors can place fixed odds bets on sporting events. Fixed odds sports betting in the UK is not pari-mutuel and does not involve any takeout; UK bookmakers earn profits by setting betting odds such that an equal amount wagered on each possible outcome (a win, loss or tie in football games or a win or a loss in other sporting events) would result in a loss to the bettor. Setting fixed odds in this way is called overround; the typical

overround in fixed odds betting on football games in the UK is about ten percent. UK bookmakers also take bets on sporting events over the internet.

Football pool betting, a form of sports betting based on correctly forecasting the outcome in a number of football games, is also legal and very popular in the UK. A number of private companies, including Littlewoods and Vernons, operate football pools in the UK. Football pool operators take entries over the internet.

#### *Sports Betting in the United States*

Currently, betting on individual sports events is only legal in the state of Nevada in the United States. Casinos in Atlantic City, New Jersey are not permitted to operate sports books. Sports books in Nevada offer points spread and fixed odds betting on all types of professional and amateur sporting events. The standard bet on a sporting event in Nevada follows a “wager 11 to win 10” format where a bettor must risk \$110 to win \$100. The ten percent commission on these bets is often called the “vig” or “juice.” Anecdotal evidence suggests that quite a bit of illegal sports betting takes place in the US. Strumpf (2004) analyzed the behaviour of several illegal sports book makers in New York City.

From 1987 until 2007, the Oregon Lottery operated Sports Action, an NFL sports betting lottery game similar to the Sports Select game offered in Canada and the La Quiniela game offered in Spain. Sports Action tickets could be purchased at Oregon Lottery outlets. Players could pick against the spread, on totals, or on other special events like the number of sacks or fumbles in a football game. A minimum of three games or special events had to be selected on each ticket, and a maximum of 14 could be selected. Players could wager between \$2 and \$20. Payouts were pari-mutuel; the minimum payout for correctly picking 3 out of 3 games was \$10 on a \$2 ticket and \$20 on a \$20 ticket for correctly picking 4 out of 4 games. If there was no winner in a category (3 picks, 4 picks, etc.), the dollars bet rolled over to the next week’s game. The takeout rate on Sports Action was 40%.

The Montana Lottery currently offers a lottery based sports betting game based on NASCAR automobile racing. Called Fantasy Auto-Racing, this game is effectively a NAC SAR parlay bet. Bettors select five drivers participating in each week’s NASCAR race and winners are determined by the number of points earned by the five drivers selected. Bettors can wager between \$5 and \$100 per ticket. Payouts are pari-mutuel, and the takeout rate is 26%. The Montana Lottery plans to offer a football betting lottery in fall 2009.

#### **Data and Empirical Analysis**

We analyze the behaviour of sports bettors in Canada, Spain, and the UK using data from three recently conducted surveys of gambling behaviour from each country. These surveys contain relatively similar questions about sports betting as well as questions about the economic and demographic characteristics of respondents.

The Canadian data come from a 2002 survey of gambling prevalence in the province of Alberta. While this survey is not nationally representative, it is representative of the adult population of Alberta, a province with a population of over 3 million, the fourth largest Canadian province. These data were collected through a random digit dial

(RDD) telephone survey administered by the University of Alberta Population Research Laboratory. The survey was conducted in the summer of 2002. 1,804 households participated in the survey.

The Spanish data come from two computer assisted RDD telephone interview surveys administered by Loterías y Apuestas del Estado (LAE), the Spanish state lottery agency, in 2005 and 2006. Both surveys included a random sample of all adult residents of Spain. The first survey took place in the spring of 2005, the second in the summer of 2006. 1,412 households participated in the first survey and 1,205 households participated in the second survey. Although a large number of identical questions appeared on both, there were a few differences between the two surveys. The exact age of the head of the household was available in the first survey but only age intervals were available in the second. We recoded each age interval variable at the midpoint of the range for the second survey. Also, monthly income data were collected by income range, and we recoded the income variable reported for each respondent at the midpoint of the range.

The UK data come from “Taking Part: The National Survey of Culture, Leisure and Sport” a nationally representative survey of the adult population of England conducted in late 2005 and early 2006 by BMRB Social Research for the Department for Culture, Media and Sport. These data were collected during a face-to-face interview lasting 35 minutes on average. Just over 26,000 households participated in the survey. In addition to questions on gambling, this survey contained detailed questions on sport participation and participation in cultural activities like attending concerts, museums, and historical sites.

All three surveys contained questions about participation in sports betting. Although the types of questions differed, the key point is that all three surveys allow us to identify people who have bet on sporting events in the past. In addition, residents of all three countries have easy access to sports betting opportunities. In Canada and Spain, sports betting games are offered by monopoly lottery companies that operate a large number of retail outlets and advertise heavily on TV and radio, and in print media. In the UK, private bookmakers operate thousands of betting shops all over the country. In addition, bookmakers and football pool operators take bets and entries over the internet. Access to legal sports betting opportunities should not be a problem for potential sports bettors in these three countries.

#### *Characteristics of Sports Bettors*

Table 1 summarizes the estimated participation rates in sports betting markets, and frequency of sports betting in the three countries. The UK survey contained questions about sports betting, including fixed odds betting on events like football matches and participation in football pools, in the last week and the last year. The Spanish survey asked only about lifetime participation in La Quiniela, the Spanish lottery’s football pool game. The Canadian survey asked questions about participation in Sport Select, the sports betting game operated by the Western Canada Lottery Corporation in Alberta over the past year.

**Table 1: Estimated Sports Betting Participation and Frequency**

	Canada	Spain	UK
Weekly Participation Rate	----	----	2.22
Annual Participation Rate	3.10	----	5.15
Lifetime Participation Rate	----	49.75	----
Participates Weekly	29.63	19.70	----
Participates Monthly	22.22	11.33	----
Participates Less Frequently	48.15	68.97	----

Participation in sports betting markets is quite high in Spain. Almost half of the adult population of Spain has purchased a La Quiniela ticket in their lifetime. The estimated participation rates in sports betting markets are much lower in Canada and the UK. Part of this difference can be explained by the time frame of the participation question. Even if most sports bettors only bet infrequently, lifetime participation rates must be higher than annual or weekly participation rates. However, the effective price of making a bet on a sporting event also plays a role in determining participation rates in sports betting markets. In the UK, a bettor can place a fixed odds bet on an individual football match, or other sporting event, with any one of the numerous private book makers operating in that market. The UK is the only market where a bet can be placed on an individual game or match. Alberta, a bettor must bet on a minimum of two sporting events; in Spain, buyers of a La Quiniela ticket must predict the outcome of multiple football matches. The effective cost of a bet also differs due to takeout and overround in each market. Canadian sports bettors face overround of anywhere from 160% to 300%, while English bettors face an overround of only about 110%. This difference probably contributes to the lower sports betting market participation rate in Canada. There is no overround in La Quiniela, but the takeout rate in this game is 45%.

The Spanish and Canadian surveys also asked questions about the frequency of participation among participants. The bottom panel of Table 1 summarizes these responses for sports bettors. In Canada about half of the sports bettors bet at least monthly; in Spain just less than one third of the bettors bet at least monthly and the rest bet less frequently. The large number of infrequent participants in sports betting in Spain helps to explain the high lifetime participation rate and low annual participation rates reported on Table 1. Infrequent participants only bet on sports occasionally, or may have only bet on sports on a handful of occasions. Many of these individuals would not report betting on sports in the last year because of the sporadic nature of their participation. But infrequent participants would answer yes if asked if they had *ever* bet on sports, even if they only bet on sports one time years ago. The time frame of the questions, coupled with infrequent participation by a large segment of the population, can explain the large differences in reported participation rates.

All three surveys contain detailed demographic and socioeconomic information about respondents. Table 2 summarizes some of the characteristics of sports bettors in these three countries.

**Table 2: Characteristics of Sports Bettors**

<b>Variable</b>	<b>Canada</b>	<b>Spain</b>	<b>UK</b>
Average Age	33.8	43.24	43.86
Average Income (000s per year)	53.07	27.85	34.57
% male	0.88	0.60	0.79
% single	0.41	0.10	0.38
% who attended college	0.45	0.56	0.29
% employed	0.77	0.71	0.69
Average # of Persons in Household	2.20	3.10	2.50

Canadian sports bettors tended to be younger and English sports bettors older. The income variables were household income in all three cases, and the reported figures have been converted to 2006 US dollars using the Purchasing Power Parity exchange rate estimates published by the OECD. Canadian sports bettors had the highest income and Spanish sports bettors the lowest. The estimated average household income of sports bettors in the UK is roughly equal to the median household income in the UK; the estimated average household income of Canadian sports bettors is well above the median household income in Canada and more than double the median household disposable income in Spain €13,714.

Sports bettors in all three countries tend to be male and employed. They also tend to be not single. The other marital status categories include married, cohabitating, divorced and widowed. The level of education of sports bettors varies widely across the three countries. Sports bettors in the UK tend to be less educated; only 29% of them attended college. Sports bettors in Canada and Spain tend to have more education, with Spanish sports bettors having the highest college attendance rate.

#### *Conditional Analysis of Sports Betting Market Participation*

The unconditional statistics discussed above provide important information about the characteristics of sports bettors in Canada, Spain and the UK. However, a conditional analysis of the factors that explain observed variation in sports betting market participation can also uncover important features about consumer behaviour in these markets.

Our conditional analysis of consumer participation in sports betting markets is based on a probit model. Consider a latent variable  $Y_i^*$  that reflects the net utility that an individual gets from betting on a sporting event.  $Y_i^*$  is determined by characteristics of the individual and the sports betting market that the individual can participate in and a random variable capturing other factors that affect the utility derived from betting on sporting events

$$Y_i^* = \beta X_i + e_i \quad (1)$$

Where  $X_i$  is a vector of individual and market characteristics,  $\beta$  is a vector of unknown parameters, and  $e_i$  is a mean zero constant variance random variable that captures all other unobservable factors that affect the utility individual  $i$  receives from sports betting. If  $Y_i^* > 0$  the individual bets on sports and if  $Y_i^* \leq 0$  he individual does not. Define an indicator variable  $Y_i$  that is equal to one if individual  $i$  is a sports bettor and

equal to zero if individual  $i$  is not a sports bettor. The unknown parameters in equation (1) can be estimated by the standard probit estimator

$$P[Y_i = 1 | X_i = x_i] = \Phi(\beta X_i) \quad (2)$$

where  $\Phi$  is the cumulative normal distribution function.

**Table 3: Probit Marginal Effects - Participation in Sports Betting**

Variable	CANADA		SPAIN		UK	
	Parameter	P-value	Parameter	P-value	Parameter	P-value
Age	-0.001	0.001	-0.004	0.001	-0.001	0.001
Income	0.0001	0.105	0.0021	0.027	0.0003	0.001
Male	0.042	0.001	0.243	0.001	0.070	0.001
Single	-0.001	0.919	-0.050	0.203	0.003	0.466
College	-0.003	0.304	0.017	0.441	-0.013	0.001
Employed	0.003	0.671	0.006	0.833	0.013	0.001
# in Household	-0.013	0.168	-0.001	0.910	-0.004	0.001
Observations	1339		2425		22497	
psuedo-R <sup>2</sup>	0.155		0.067		0.080	
Log Likelihood	-172		-1568		-4461	

Table 3 contains the marginal effects implied by the parameter estimates from equation (2) and the P-values for a two-tailed t-test of significance on these parameters, and basic summary statistics from probit models estimated using data from the three surveys described above. This set of explanatory variables has been used to explain participation in gambling markets in a number of previous studies (Scott and Garen, 1994; Farrell and Walker, 1999; Worthington, 2001).

Three consistent determinants of sports betting emerge from these results. First, males are more likely to bet on sports than females. The marginal effect varies quite a bit across the three countries, ranging from 4% in Canada to over 24% in Spain, but the evidence clearly suggests that men are more likely to bet on sports than women. Second, the likelihood that an individual bets on sports falls with age. Alternate probit models that included age squared were estimated in order to determine if the relationship between betting on sports and age was non-linear. The estimated parameters on the age squared variables were not statistically significant. Third, the likelihood that an individual bets on sports increases with income. Although the marginal effect is not large, this suggests that sports bettors tend to have somewhat higher incomes than people who do not bet on sports.

Marital status, employment status, and household size are not strongly associated with the tendency of individuals to bet on sports. The relationship between education and sports betting is mixed. In the UK, individuals who did not attend college are more likely to bet on sports, while the level of education is not associated with the likelihood that an individual bets on sports in Spain and Canada.

The general picture that emerges from the conditional analysis of participation in sports betting markets in Canada, Spain and the UK is that sports bettors tend to be younger males with relatively high income. These results hold in three different countries with legal and easy access to sports betting opportunities. The specific types of sports betting available differ as well, with more sports betting options available in the UK and fewer in Canada and Spain.

### **Discussion and closing comments**

We motivated this paper with two types of proposed changes in the availability of sports betting opportunities: the creation of new sports betting opportunities where none previously existed and the elimination of all sports betting opportunities that have taken place recently in the US; and the proposed expansion of existing sports betting opportunities beyond the current system of state-sponsored monopoly sports betting currently in place in many EU countries. In both cases, the welfare of sports bettors and government revenues generated from implicit or explicit taxation of sports betting will be affected by these changes in betting opportunities.

#### *Who will bet on sports if betting opportunities expand?*

Based on our analysis of the characteristics of sports bettors, annual participation in sports betting markets is low. Less than 5% of the survey respondents in Canada and the UK reported betting on sports in the past year. Although lifetime participation may be high, casual gamblers appear to bet on sports infrequently in the UK and Canada. In Spain, about 30% of participants reported betting in football pools weekly or monthly, suggesting a significantly higher annual participation rate. In all three countries, participants were largely male, and the conditional analysis of participation indicates that participation declines with age. The average sports bettor in all three countries had household income at or above the median household income, and the conditional analysis of participation indicates that participation increases with income. Thus the typical sports bettor is a young male with relatively high income.

Although the annual participation rates in Canada and the UK are small, they are not zero. People in these three countries are interested in betting on sports, and the US is quite similar to Canada and the UK in many respects. This implies that a similar number of people in the US would be interested in legally betting on sports, if available. These potential sports bettors are either not currently betting on sports, or are betting on sports illegally. If they are not currently betting on sports, providing these individuals with legal sports betting opportunities will be a pareto improvement.

The expansion of sports betting opportunities in places like the US where sport betting was not available will likely attract a similar type of individual: young males with relatively high incomes. This profile of sports bettors matches the characteristics of those sports fans who watch sports on television (Hammervold and Solberg, 2006) and attend live sporting events (Borland and Macdonald, 2003). The similar characteristics of sports spectators and sports bettors also suggest that there may be important complementarities in watching sports and betting on sports.

#### *Who are the winners and losers from expanded opportunities?*

The answer to this question varies in the US and the EU. Recall that sport betting opportunities are being made legal in the US, while in the EU the monopoly sport

betting operations run by governments may be eliminated in favour of increased competition.

In the US, legal sports betting will be offered where it was previously illegal. As was mentioned above, this opportunity will increase the utility of individuals who would like to bet on sports but were unable to when sports betting was illegal. Since sport betting in Canada, and in the US state of Montana, features extremely high takeout rates or overround, the revenues generated from sports betting should be substantial, benefitting the government and, indirectly, those who receive government-provided benefits financed by the revenues generated from sports betting.

In addition, the government revenues generated from sport betting have two appealing features. First, revenues raised from sport betting constitute a “voluntary” tax in that no one is obligated to bet on sports. Second, the individuals who will likely participate in this activity have relatively high incomes, making this implicit tax both voluntary and progressive.

The most vocal opponents to legalized sport betting in the US were professional sports leagues like the NFL and amateur sports organizations like the NCAA. Since these organizations oppose the legalization of sport betting, they would appear to lose something following the legalization of sport betting. However, these losses are difficult to identify.

Opponents of legalized sport betting claim that the opportunity to bet on sports corrupts participants, including athletes and officials, by creating incentives to fix games and engage in other behaviour like point shaving that reduces the perceived legitimacy of the product. But game fixing and point shaving appear to be rare in North American team sports, based on past cases where participants engaged in game fixing or point shaving were caught and punished. National Basketball Association referee Tim Donaghy reportedly gambled on games he officiated in the 2007 season. Prior to this, no allegations of game fixing related to gambling have been made in the four major professional sports leagues in North America in some time. College sports, on the other hand, periodically experiences episodes of game fixing. Examples of game fixing related to gambling in the NCAA include the University of Toledo (men’s basketball and football 2003-2006), Northwestern University (men’s basketball, 1995), Arizona State University (men’s basketball, 1994), and Boston College (football, 1996; men’s basketball, 1978). However, NCAA athletes receive no compensation beyond tuition and room and board, providing NCAA athletes with an incentive to engage in this behaviour. In addition, there are hundreds of Division I football and basketball programs in the US, compared to a few dozen professional teams in each league, providing many more opportunities for game fixing.

Also, good reasons exist to believe that the marginal effect of increased opportunities to bet on sport will not affect the incentive to fix games. Sport betting is already legal in Nevada, and internet betting with off-shore sports book is relatively easy, so any potential game fixer already has access to sports betting opportunities. In addition, the other existing sport betting opportunities in North America consist of “parlay” games where multiple contests must be bet on in each game. This clearly increases the cost of game fixing because players on multiple teams would have to be involved. The

expansion of “parlay” type sports betting would appear to have only a limited effect on the incentive to fix games in North America.

Two groups would clearly lose from an expansion of sports betting opportunities in North America: illegal sports book makers and “offshore” internet sports books that currently operate in the Caribbean and central American countries with liberal gambling laws. An expansion of legal sport betting opportunities in the US would reduce the handle at these locations, if the legal opportunities are substitutes for their betting options.

In Europe, the winners and losers differ significantly. The clear losers will be the state-operated sport betting monopolies, and the groups who receive funding generated by the rents earned by these monopolies. The introduction of competition in European sport betting markets, either in the form of on-line sports books or UK style private betting shops will reduce the monopoly rents earned by state-operated monopolies. The revenues from state-sponsored sport betting monopolies in Europe typically go to specific activities like the training of elite athletes or the operation of the European club sport system that trains young athletes and organizes competitions. These organizations will have to find new sources of funding if the rents generated from sport betting disappear. The equity and efficiency effects of this change are complex. To the extent that watching sport and betting on sport are complements, sports bettors are potentially a reasonable source of funds to subsidize the training of athletes and the organization of competitions. However, participation in sport may generate other important benefits to both the participants, in the form of enhanced earnings ability and to society in the form of a healthier and happier population. If these benefits are important, then alternative methods of financing the training of athletes and the organization of competitions may be desirable.

The winners in Europe will clearly include sports bettors. They will have access to a richer array of sports betting opportunities and will be subject to lower takeout rates and overround. Increased access to higher quality betting opportunities will increase the utility sports bettors get from betting and lower takeout rates and overround will reduce the effective cost of betting. In addition, the expansion of internet betting will reduce the transactions costs faced by sports bettors.

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