The social costs of (online) gambling

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Agenda

- Introduction
- Is gambling a "normal" good? (Ir)rationality and other things
- The social costs of gambling in general
- Problems of quantifying social costs and alternatives
- Discussing online gambling
- Conclusions and perspective



Introduction to the Topic of Social Costs

- Calculation of social costs is a (young) task of economics
- Methodology not matured
- Different concepts lead to different meaning of same terms
- Effect: Misunderstandings and non-comparable studies
- Problems intensified by non-disclosed assumptions and concepts as well as implicitly and ill-defined terms
- Assessment of different costs as "social costs" often adhoc, arbitrary and not well-grounded
- Especially true for studies regarding the social costs of gambling



Methodology: Social Costs of Gambling



- Social costs opposed to social benefits yield effect on welfare
- Social costs as sum of private and external costs
- Monetary externalities have corresponding benefit
- Technological externalities have no corresponding benefit
- Players losses (tangible private costs) equal industry earnings
- Intangible private costs mostly due to gambling addiction



Welfare Effect if Consumers are Rational

• Welfare effect (WE) = Benefits (B) - costs (C)

Industry earnings (IE)

- + Consumer benefits (CB)
- Private Costs (PC)
- Externalities (EX)
- = Welfare effect (WE)
- If consumers are rational: CB > PC

rational consumers completely internalize their costs

- CB PC= Consumer surplus (CS) \rightarrow CB = PC + CS
- \rightarrow WE = IE + PC + CS PC EX
- \rightarrow WE = IE + CS EX



Regulation only in relation to negative externalities
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Different Views about Rationality

- Rationality is a common assumption in economics
 - "The earth is *round*, but for most purposes it's sensible to *treat it as flat.*" (Theodore Levitt)
 - Do "most purposes" include gambling?
- Three different viewpoints:
 - Classic economist: "People are rational because I assume them to be."
 - Psychologist: "Rationality? Isn't that something to eat?"
 - Behavioural economist: "Let's have a look if people's behavior can be explained by the assumption of rationality."



Cues and Consistent Preferences

 Cues are stimuli of the environment, that temporarily increase the marginal utility of a good c



- "Conditioned response": In the moment of a cue (hot mode), individuals decide to consume because U_c > C_c. Afterwards (cold mode) they may regret their decision
- Cues temporarily change the preference order (Laibson 2001)
- Individuals are willing to bear huge costs to avoid cues (Laibson 2001)
- This leads to Cue-Management (Schelling 1984)



Discounting and Consistent Preferences



- People discount hyperbolically (Ainslie 1975, Thaler 1981), especially addicted people (Vuchini and Simpson 1998)
- Hyperbolic discounting and addiction are closeley linked (Skog 2005)
- Hyperbolic discounting can be modelled best in a utility function based on two systems with different discount rates(McClure et al. 2007)
 - > β -system: high discounting, related to the mesolimbic system
 - > δ -system: slow discounting, related to the prefrontal cortex
 - > β -system activated by cues \rightarrow discount rate increases temporarily



Consistend Preferences & Reward Bundling

• Decision bundling can lead to exponential discounting (Ross et al. 2008)



- Horizon: amount of bundled decisions
- The greater the path dependency of decisions, the longer the horizon, that is needed for consistent decisions



Addictive goods are highly path dependent

- Path dependent decisions: Utility in the future depends on todays decisions
- Costs of addiction arise in later periods and depend on consumption in earlier periods
- Consumption of addictive goods create so called "consumption capital": The higher the consumption capital, the lower the overall utility and the higher the marginal utility of consumption
- Consumption capital increases with consumption and decreases over time
- Consumption capital in equilibrium: CC*



Do people know the costs of consuming an addictive good?

- Many addicted people start consumption as juveniles
- Cost of addiction varies from person to person
 - Cost of addictions is an unknown to the decision maker (at least in advance)
- Probability of getting addicted varies from person to person
 - Probabilitys of getting addicted is an unknown to the decision maker (at least in advance)
- Even if range of costs and range of probability of addiction are known, decision are suboptimal
 - Even with rationality, information deficiency paired with path dependency lead to suboptimal decisions in non-one-shot-games
- Even if people predict everything correctly: Do they bundle their decisions until t*?



Do gamblers evaluate their utility correctly?

- Gamblers overestimate their chances of winning (Weinstein 1980)
 - Illusion of control (Langer and Roth 1975)
 - 75% of all gamblers believe that winnings occur in cycles and events are not independent (Australian Productivity Commission 2009)
 - 32% of all problem gamblers think it is possible to win money consistently (Australian Productivity Commission 2009)
- People overestimate the utility of winning a jackpot
 - People assume the same marginal utility of money as in their current situation



First Resumé

- Gambling is an addictive good
- Cues lead to hyperbolic discounting and therefore to intransitive utility functions and insconsistent decisions
- People, especially addicts, have a too short horizon and do not bundle enough decisions
- People underestimate the costs of addiction
- Gamblers overstimate their marginal utility
- → Gamblers do not internalize their costs completely!
 → What about the welfare effect of gambling?



Social Costs of Gambling: Private costs

- Addicts and non-addicts
 - Players' losses
- Only Addicts:
 - Lost income due to lost jobs
 - Opportunity costs
 - Caused mental disorders (e.g. depression)
 - Caused physical disorders (e.g. increased stress level)
 - Caused substance disorders
 - Change of the brain structure (worse quality of decisions in other areas of life)
 - Costs of Cue-Management
- Costs of addiction mostly intangible!



Social Costs of Gambling: Monetary externalities

- Monetary externalities have a corresponding benefit and no welfare effect
 - ➢ Not paid debts
 - Liabilities paid by third parties
 - Increased social transfer
 - Offenses against property to obtain money to gamble (only direct monetary effect)
 - Cannibalization of other industries



Social Costs of Gambling: Technological externalities

- Technological externalities have no corresponding benefit and an effect on welfare
- Technological externalities of pathological gambling
 - Disruption of families and reduced life quality of relatives and friends of pathological gamblers
 - Treatment costs for caused psychic , physical, and substance disorders
 - Productivity losses employer (and in some part society)
 - Increased risk of addiction for children of addicts
 - Debt collecting
 - Costs of procedure of personal bankruptcy
 - Follow-up costs of crimes to obtain money to gamble
 - Deadweightlosses of increased redistribution (e.g. social systems)



Social Costs of Gambling: Technological externalities #2

- Technological externalities not related to pathological gambling
 - Costs of lobbying and corruption
 - Costs of regulation of the industry
 - Costs of monitoring the industry
 - Alleviated money laundering
 - Regressive effect of gambling (money goes from poor to rich people)



Challenges to Quantify the Social Costs of Gambling

- Most important costs are intangible
- Intangible costs cannot be measured (Walker 2007, Reith 2007) or are even "Impossible to calculate" (NGISC 1999)
- Quantifying costs using "willingness to pay" (highly) speculative
- (Degree of) causality of some effects unknown, e.g. of induced substance disorders
- Insufficient data base
- Until now: No reasonable cost estimation

\rightarrow Is there a simple and practical second-best solution?



Option 1: Fraction of Industry Turnover with Problematic Gamblers #1

- How much money is made with pathological gamblers?
 - Most costs relevant to welfare are related to addiction
- Industry earnings are equal to players' losses (two sides of the same coin)
- Players' losses by interview?
 - Conscious false answers
 - Lying is a diagnostic criterium
 - Unconscious false answers
 - Self-Reporting-Bias
 - Near-winnings not interpreted as losses
 - Gamblers only report 13.6% of their losses in interviews (Productivity Commission 2009)

Table B.1 People under-report their gambling

Household Expenditure Survey (HES) 2003-04

		HES	Reliable data	Share of true value
		\$m	\$m	%
All ga	ambling	2,204	16,247	13.6
L	ottery/Lotto/scratchies	1,545	1,601	96.5
E	EGMs	306	10,651	2.9
1	able games	-56	1,593	
University of I	<u>Other</u>	410	2,402	17.1
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Option 1: Fraction of Industry Earnings with Problematic Gamblers #2

- Calculation of industry earnings per problematic gambler by using the different playing styles
- Pathological gamblers play
 - ➢ More often,
 - More intensely,
 - Longer than recreational gamblers

Shareofprobl.Gamblers * turnoverMultiplier

*IE / probl.Gambler = ______Shareofprobl.Gamblers * turnoverMultiplier + Shareofrecr.Gamblers *1*

- For German slot machines:
 - Share of probl. Gamblers: 11% (Becker 2009)
 - Turnover multiplier (analog Australia): 10,5 (Productivity Commission 2009)

→ IE/probl. Gambler:
$$\frac{0.11*10.5}{0.11*10.5+0.89*1} = 56.4\%$$



Option 2: Earnings per Pathological Gambler #1

- Variable 1) Industry earnings
- Variable 2) Number of addicts
- Ratio: Industry earnings/number of addicts to evaluate different games
- Interpretation
 - > How much earnings are needed to accept one addict?
 - Ranking of games by the earnings which can be generated until one addict arrises (on average)



Option 2: Earnings per Pathological Gambler #2

• Some numbers for Germany

	Number of path. gamblers*	Industry earnings per path. gambler
Commercial slot machines	191,680	15,897
Betting	15,755	28,689
Casinos	21,006	43,940
Lotteries	14,044	346,910
Other	20,090	34,693
Overall	262,575	38,062



Second Resumé

- Relevant parameter: welfare effect
 - Social costs have to be opposed to the benefits
- Gambling is an addictive good and the consumers do not internalize all of their private costs
- Many challenges to quantify the social costs of gambling
 » "Degree" of rationality
 - Quantifying intangible costs
 - Data base
- Meanwhile: Second-best solutions to evaluate different games
 - 1) Fraction of industry earnings with problematic gamblers
 - 2) Earnings per pathological gambler



Some thoughts on the special case of online Gambling



Looking at the benefits

- Costs go down
 - No rent
 - No labor
 - Scalable software

\rightarrow marginal costs are nearly zero \rightarrow payouts go up

Operator	Payout ratio	Price	relative price
betfair ^a	97,5%	2,5%	100%
Paddypower	93,5%	6,5%	260%
Expekt	93,4%	6,6%	264%
Gamebookers	93,4%	6,6%	264%
Bet-at-home	92,5%	7,5%	300%
Unibet	91,8%	8,2%	328%
Sportwetten Gera	91,27%	8,73%	349%
bwin	91%	9%	360%
betway	90,8%	9,2%	368%
Sportingbet	90,7%	9,3%	372%
Interwetten	89,9%	10,1%	404%
Bet365	89,6%	10,4%	416%
Sportwettbüros offline	85%	15%	600%
Oddset ^b	51%	49%	1.960%



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Looking at the Costs: Industry earnings go abroad

- If operators are located in tax heavens: Industry earnings go abroad → benefits are smaller
 - ➢ No profits
 - No tax
 - No jobs
 - > Not that different from any other good which is imported...
- But: costs stay local

→ With online gambling, profits are globalized, costs are not



Looking at the Costs: Online gambling is a compelment to offline gambling

Dependent Variable: Online Poker Market Size (USD)

Coefficients	Model (1)	Model (2)	Model (3)	Model (7)	Mode1 (8)
Casino Revenue (Mittions of USD)	2544.61***	2584.04***	2548.90***		2749.99***
Lottery Revenue (Mittions of USD)	(4.28)	(3.58)	(4.30)		(4.65) 2613.61 (0.58)
Number of Machines in Casinos and Non-Casinos				176.19***	
Internet Users per 1,000,000	78.03***		83.05**	63.70**	65.57***
Disposable Income per Capita (Thousands USD)	(3.84)	240.23	-104.62	283.38*	201.10
Population	3.31***	3.29***	3.32***	3.57***	3.25***
Washington State Dummy	(12.08)	(10.00)	(11.97)	-9.72x106***	-8.86x 10 ⁶⁺⁺
Canadian Province Dummy				(-5.51) 1.38x10 ⁷ *** (4.40)	(-3.69) 1.26x10 ⁷ *** (4.58)
Constant	-6.21x10 ^{7***}	$-1.03x10^{7}$	-6.23x10 ⁷ ***	-6.43x107***	-6.24x107 ***
	(-3.96)	(-1.71)	(-3.92)	(-4.81)	(-4.67)
Adjusted R-square	0.882	0.857	0.880	0.917	0.914



Looking at the costs: Is online gambling more addictive?

- More addictive thant what? \rightarrow distinguish bettwen games!
- Probably: online poker > offline poker
- What about slot machines?
- Sure, online gamblers show higher prevalence rates of addiction. But: Maybe just the addicted players were the first to switch? → correlation ≠ causality
- But qualitative arguments sugegst a higher addictive potential
 - > Higher availability
 - Faster game play
 - Less control



Money laundering via online gambling: 147 payment options

Rang	Zahlungsdiensleister	Zahlungsart	Akzeptanz bei Anbietern	
			absolut	in Prozent (von 2.278)
1	VISA	Kreditkarte	2.117	92,9%
2	MasterCard	Kreditkarte	2.063	90,6%
3	NETELLER	E-Wallet	1.623	71,2%
4	Banküberweisung	Überweisung	1.397	61,3%
5	Moneybookers	E-Wallet	1.243	54,6%
6	Maestro	Debitkarte	733	32,1%
7	Solo	Debitkarte	649	28,5%
8	CLICK2PAY	E-Wallet	638	28%
9	Scheck	Scheck	583	25,6%
10	VISA Electron	Debitkarte	582	25,5%
35	Paypal	E-Wallet	136	6,0%
71	Bargeld	Bargeld	25	1,1%
101	Elektronische Lastschrift	Lastschrift	6	0,3%
147	T-Pay	Verschiedene	2	0,1%

[Casinocity 2010]



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Money laundering via online gambling: Case A: Small cocaine dealer

- Objective: Transferring 10,000€ cash to a legal and official bank account in Germany.
- Possibility 1: Payments via Paysafecards





Money laundering via online gambling: Case A: Small cocaine dealer #2

- Objective: Transferring 10,000€ cash to a legal and official bank account in Germany.
- Possibility 2: Payments via Player Transfer





Money laundering via online gambling: Case A: Medium cocaine dealer

- Objective: Transferring 200,000€ cash to a legal and official bank account in Germany.
- Possibility 1: Payments via Foreign bank account





Money laundering via online gambling: Case A: Medium cocaine dealer #2

- Objective: Transferring 200,000€ cash to a legal and official bank account in Germany.
- Possibility 2: Payments via Foreign bank accounts and E-Wallets



Money laundering via online gambling: Case A: Huge cocaine dealer #2

- Objective: Transferring 20,000,000€ cash to a legal and official bank account in Germany.
- Possibility: Founding a online gambling operator





Potential of online gambling for prevention of addiction

- Potential is huge!
- Electronic game play allows to easily implement selfcommitment devices and enforce them
- Probable pathological gamblers can be identified by their playing/betting behavior
- Casinos have to ban these players (to give them the right incentive to really do that you have to threaten them to lose the license otherwise



Juveniles way to gambling in the past



1996/1998 Pokémon







Juveniles way to gambling in the present





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Summary and Perspectives

- The reason to limit gambling are ist social costs
- The social costs are mainly due to addiction
- The social costs matter as players are not rational and/or fully informed
- Online gambling as a new threat
- Online gambling as a new opportunity

