

Online Poker: Regulation & Network Effects



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Goal of Research



- WTP Estimates Online Poker
- Regulation
- Network Effects (Liquidity)
- Role of Regulation
- Policy Experiment

Online Poker



- **Early days**
 - Little Regulation
 - Exponential Growth
- **Uncertainty about Fairness**
 - Collusion
 - Bots
- **Unlawful Internet Gambling Enforcement Act (UIGEA)**
 - Financial Transactions

Online Poker



- **Black Friday**
 - Indictments: Fraud, Money Laundering, UIGEA
 - Seizure of Assets and Sites
- **DoJ ruling**
 - Online Poker, and Casino Gaming
 - Interstate Agreements
- **Nevada, New Jersey, Delaware**
 - Disappointing Start
 - Ultimate Poker

Theoretical Framework



- **Value of Regulation**
 - Reduces Uncertainty
 - Alleviates Deposit/Withdrawal Difficulties
 - Cannot cross borders without Interstate Agreements

- **Network Effects**
 - Liquidity
 - Virtuous Cycle
 - Critical Mass

Discrete Choice Experiment (DCE)



- Choice experiment manipulates the characteristics for a series of hypothetical internet poker sites to obtain the optimal variation in the data needed to estimate the value of these characteristics.
- During the DCE, respondents are presented with eight choice sets, each with two hypothetical poker website alternatives,
- Players indicate their preference by making a mutually exclusive choice between A or B. The alternatives differ by the levels of the five poker website features.
- Regulated online poker is a relatively new service, a DCE generates data that are not available experiments.



Micro Stakes (\$0.01 to \$0.50)

Characteristics and Levels based on Interviews with Poker Players, Online Poker Sites, Two Focus Groups, and Expertise.

Table 1. Features of Online Poker Websites

Feature	Explanation	Levels
Government Regulation	The poker website is regulated by the government entity in the geographical area where the respondent lives.	Yes No
Site Security	The quality of the website's security features compared to the overall industry standard.	Average Above Average
Cost	Time-Based Rake is based on a short-handed table of No-Limit Texas Hold'em with 6 players playing for Micro Stakes (up to \$0.50 Big Blind).	Micro Stakes: \$1.50 per hour, per table \$2.50 per hour, per table \$3.50 per hour, per table \$4.50 per hour, per table
Micro-Stakes Players on Site	Number of players on a site playing No-Limit Texas Hold'em for Micro Stakes (up to \$0.50 Big Blind)	50 players 150 players 500 players 675 players 1,250 players 4,000 players
Average VPIP-Micro Stakes	Voluntarily Put Money in the Pot: The website's average VPIP for Texas Hold'em at tables with 6 players.	19% 28% 37%



Small Stakes (\$0.50 to \$2.00)

Table 1. Features of Online Poker Websites

Feature	Explanation	Levels
Government Regulation	The poker website is regulated by the government entity in the geographical area where the respondent lives.	Yes No
Site Security	The quality of the website's security features compared to the overall industry standard.	Average Above Average
Cost	Time-Based Rake is based on a short-handed table of No-Limit Texas Hold'em with 6 players playing for Small Stakes (\$0.51 to \$2.00 Big Blind).	Small Stakes: \$5.00 per hour, per table \$8.25 per hour, per table \$11.50 per hour, per table \$14.75 per hour, per table
Small-Stakes Players on Site	Number of players on a site playing No-Limit Texas Hold'em at Small Stakes (\$0.51 to \$2.00 Big Blind)	50 players 150 players 500 players 1,250 players 2,500 players 4,000 players
Average VPIP-Small Stakes	Voluntarily Put Money in the Pot: The website's average VPIP for Texas Hold'em at tables with 6 players.	19% 28% 37%



Middle Stakes (\$2.00 to \$10.00)

Table 1. Features of Online Poker Websites

Feature	Explanation	Levels
Government Regulation	The poker website is regulated by the government entity in the geographical area where the respondent lives.	Yes No
Site Security	The quality of the website's security features compared to the overall industry standard.	Average Above Average
Cost	Time-Based Rake is based on a short-handed table of No-Limit Texas Hold'em with 6 players playing for Middle Stakes (\$2.01 to \$10.00 Big Blind).	Middle Stakes: \$9.00 per hour, per table \$15.00 per hour, per table \$21.00 per hour, per table \$27.00 per hour, per table
Middle-Stakes Players on Site	Number of players on a site playing No-Limit Texas Hold'em for Middle Stakes (\$2.01 to \$10.00 Big Blind)	25 players 75 players 225 players 500 players 1000 players 2000 players
Average VPIP-Middle Stakes	Voluntarily Put Money in the Pot: The website's average VPIP for Texas Hold'em at tables with 6 players.	19% 28% 37%



High Stakes (\$10.00 and above)

Table 1. Features of Online Poker Websites

Feature	Explanation	Levels
Government Regulation	The poker website is regulated by the government entity in the geographical area where the respondent lives.	Yes No
Site Security	The quality of the website's security features compared to the overall industry standard.	Average Above Average
Cost	Time-Based Rake is based on a short-handed table of No-Limit Texas Hold'em with 6 players playing for High Stakes (above \$10.00 Big Blind).	High Stakes: \$10.00 per hour, per table \$17.00 per hour, per table \$23.00 per hour, per table \$30.00 per hour, per table
High-Stakes Players on Site	Number of players on a site playing No-Limit Texas Hold'em for High Stakes (above \$10 Big Blind)	5 players 25 players 60 players 150 players 300 players 500 players
Average VPIP-High Stakes	Voluntarily Put Money in the Pot: The website's average VPIP for Texas Hold'em at tables with 6 players.	19% 28% 37%



Example DCE question

Nine Blocks of Eight Choice Experiments for each Stakes level.

Qualtrics Randomly Assigned Respondents

Orthogonal and Balanced Design (A.K. Singh)

Question 1 of 8
While this is a hypothetical choice and not a real one, we ask you to consider your preferences and make choices just as if you were choosing a website to play No-Limit Texas Hold'em.

Assume that all other characteristics of the websites are the same except for the features included in the options.

For this first question, we highlight the differences in levels of the features in red. For some features, there may be no difference.

	Option A	Option B
<i>Government Regulation</i>	No	Yes
<i>Site Security</i>	Average	Above Average
<i>Cost</i>	\$5.00 per hour, per table	\$8.25 per hour, per table
<i>Small-Stakes Players on Site</i>	2,500 Small-Stakes Players	4,000 Small-Stakes Players
<i>Average VPIP-Small Stakes</i>	19%	28%
	Option A is not <i>Regulated</i> , has lower <i>Security</i> and <i>Cost</i> , fewer <i>Players on Site</i> , and a lower <i>Average VPIP</i> .	Option B is <i>Regulated</i> , has higher <i>Security</i> and <i>Cost</i> , more <i>Players on Site</i> , and a higher <i>Average VPIP</i> .

*Definitions of characteristics can be seen by clicking here, and will appear in separate browser tab.

*Cost is for a game where the big blind equals \$2.

Which Option do you prefer?

Option A



Option B



NEXT

Survey



- December 12, 2014 (seven days)
- Social Media (Convenience Sample)
- No compensation
- 1,491 people started the survey.
- 937 started the DCE
- 884 answered all seven of the DCE questions.
- US only
- Dropped respondents with no variation.
- 10,416 observations from 744 respondents

Summary Statistics

(standard deviations in parentheses)



<u>Variables</u>	<u>All</u>				
	<u>Stakes</u>	<u>Micro</u>	<u>Small</u>	<u>Middle</u>	<u>High</u>
Age	38.543 (12.19)	39.633 (13.18)	38.771 (11.6)	36.769 (11.66)	38.583 (12.73)
Income	62.878 (34.15)	55.714 (35.67)	61.019 (31.87)	71.305 (32.94)	93.182 (27.74)
Bachelors or More	0.152 (0.36)	0.163 (0.37)	0.132 (0.34)	0.166 (0.37)	0.208 (0.42)
Male	0.867 (0.34)	0.856 (0.35)	0.858 (0.35)	0.895 (0.31)	0.880 (0.33)
Play for Money	0.749 (0.43)	0.607 (0.49)	0.764 (0.43)	0.878 (0.33)	0.920 (0.28)
No Active Account	0.180 (0.39)	0.148 (0.36)	0.217 (0.41)	0.155 (0.36)	0.200 (0.41)
Respondents	744	229 31%	309 42%	181 24%	25 3%

Summary Statistics

(standard deviations in parentheses)



<u>Variables</u>	<u>All</u> <u>Stakes</u>	<u>Micro</u>	<u>Small</u>	<u>Middle</u>	<u>High</u>
Hours per Week	18.207 (25.63)	13.515 (18.93)	17.430 (23.53)	24.514 (33.66)	25.120 (27.62)
Multi-Table Never	0.031 (0.17)	0.035 (0.18)	0.029 (0.17)	0.033 (0.18)	0.000 (0.00)
Multi-Table Always	0.360 (0.48)	0.262 (0.44)	0.353 (0.48)	0.459 (0.50)	0.640 (0.49)
Nevada	0.118 (0.32)	0.109 (0.31)	0.104 (0.30)	0.122 (0.33)	0.360 (0.49)
New Jersey	0.028 (0.17)	0.017 (0.13)	0.032 (0.18)	0.033 (0.18)	0.040 (0.20)
California	0.090 (0.29)	0.122 (0.33)	0.061 (0.24)	0.099 (0.30)	0.080 (0.28)
Respondents	744	229 31%	309 42%	181 24%	25 3%

Fiedler (2011)

Hamburg data - 2 million +



- Hamburg online poker data set
 - 2 million plus poker identities
 - Six months
- One session (18 percent)
- 100 to 180 sessions (3.5 percent) in the six-month period.
- More than 180 sessions (2.1 percent)
- Average playing habits are driven by a small group of heavily involved poker players

Conditional Logit Base Results



<u>Variables</u>	<u>All Stakes</u>	<u>Micro Stakes</u>	<u>Small Stakes</u>	<u>Middle & High Stakes</u>
Regulation	0.457*** (0.0394)	0.574*** (0.0779)	0.414*** (0.0655)	0.602*** (0.0801)
Security	0.532*** (0.0412)	0.521*** (0.0752)	0.577*** (0.0654)	0.604*** (0.0809)
Cost	-0.135*** (0.0077)	-0.626*** (0.0499)	-0.193*** (0.0127)	-0.103*** (0.0094)
Mid-Tight	0.474*** (0.0500)	0.414*** (0.0959)	0.623*** (0.0800)	0.724*** (0.1054)
Loose	0.740*** (0.0599)	0.738*** (0.1146)	0.808*** (0.1008)	1.025*** (0.1263)
Players	0.262*** (0.0197)	0.199*** (0.0368)	0.229*** (0.0332)	0.658*** (0.0848)
Players2	-0.0116*** (0.0011)	-0.00785*** (0.0020)	-0.0102*** (0.0019)	-0.0593*** (0.0109)
Players3	0.000154*** (0.0000)	0.000102*** (0.0000)	0.000140*** (0.0000)	0.00163*** (0.0004)
Observations	10,416	3,206	4,326	2,884

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

WTP

Poker-Site Characteristics

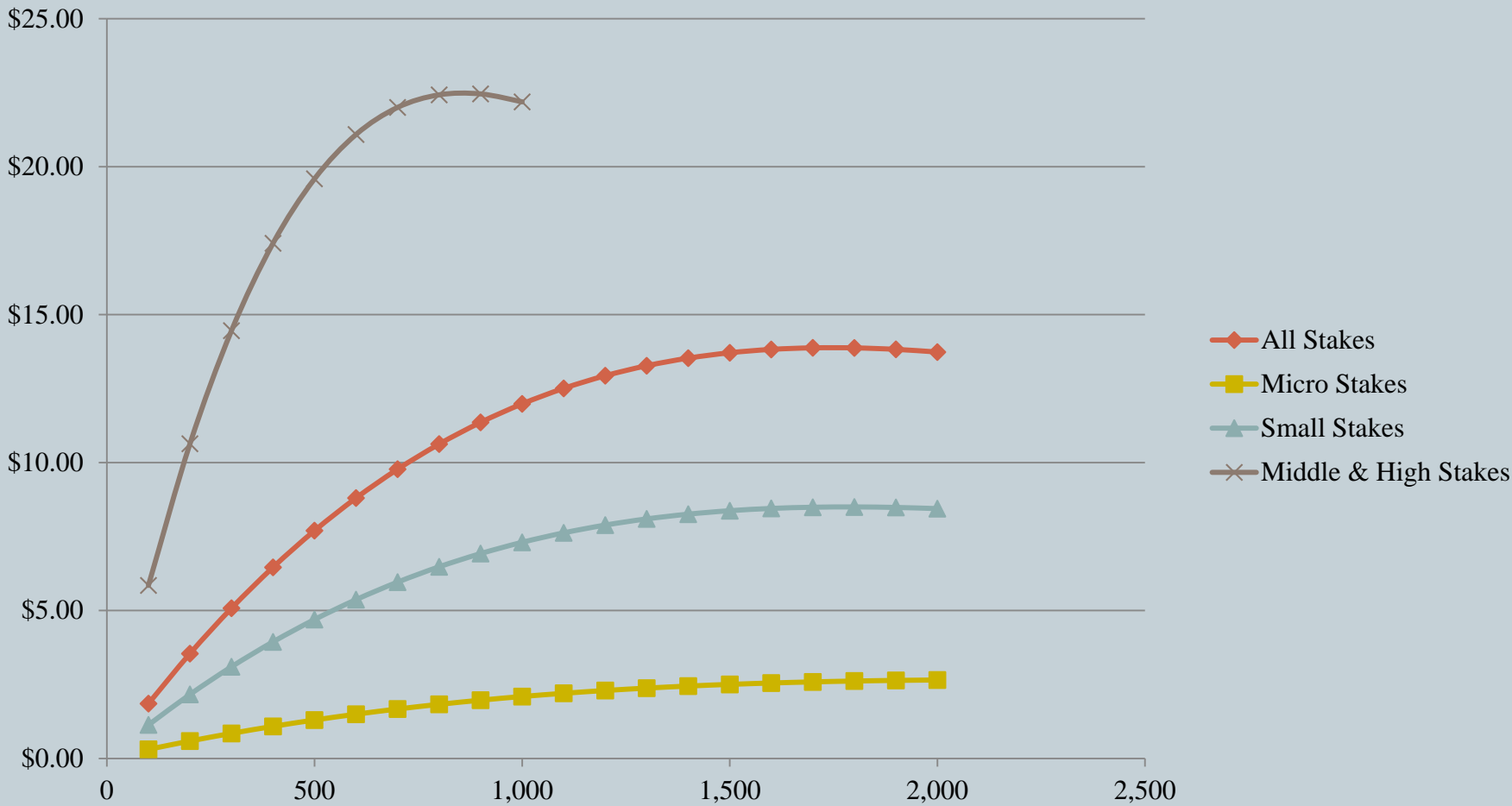


	<u>All</u> <u>Stakes</u>	<u>Micro</u> <u>Stakes</u>	<u>Small</u> <u>Stakes</u>	<u>Middle & High</u> <u>Stakes</u>
Regulation	\$3.37*** (0.31)	\$0.92*** (0.12)	\$2.14*** (0.33)	\$5.86*** (0.77)
Security	\$3.93*** (0.35)	\$0.83*** (0.12)	\$2.99*** (0.36)	\$5.88*** (0.78)
Mid-Tight	\$3.50*** (0.40)	\$0.66*** (0.15)	\$3.22*** (0.43)	\$7.05*** (1.01)
Loose Play	\$5.47*** (0.49)	\$1.18*** (0.19)	\$4.18*** (0.53)	\$9.98*** (1.21)
Observations	10,419	3,206	4,326	2,884

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

WTP Network Effects



WTP: Regulation & Security

by Player Motivation



ALL STAKES

	Money	Entertainment	Difference
Regulation	\$3.58*** (0.39)	\$2.38*** (0.45)	\$1.20** (0.59)
Security	\$3.82*** (0.42)	\$3.46*** (0.54)	\$0.36 (0.68)

MICRO STAKES

	Money	Entertainment	Difference
Regulation	\$1.00*** (0.17)	\$0.77*** (0.17)	\$0.23 (0.24)
Security	\$0.70*** (0.16)	\$1.00*** (0.20)	-\$0.30 (0.25)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

WTP: Regulation & Security

by Player Motivation



SMALL STAKES

	Money	Entertainment	Difference
Regulation	\$2.09*** (0.39)	\$2.27*** (0.64)	-\$0.18 (0.75)
Security	\$2.62*** (0.41)	\$3.97*** (0.68)	-\$1.35* (0.80)

MIDDLE & HIGH STAKES

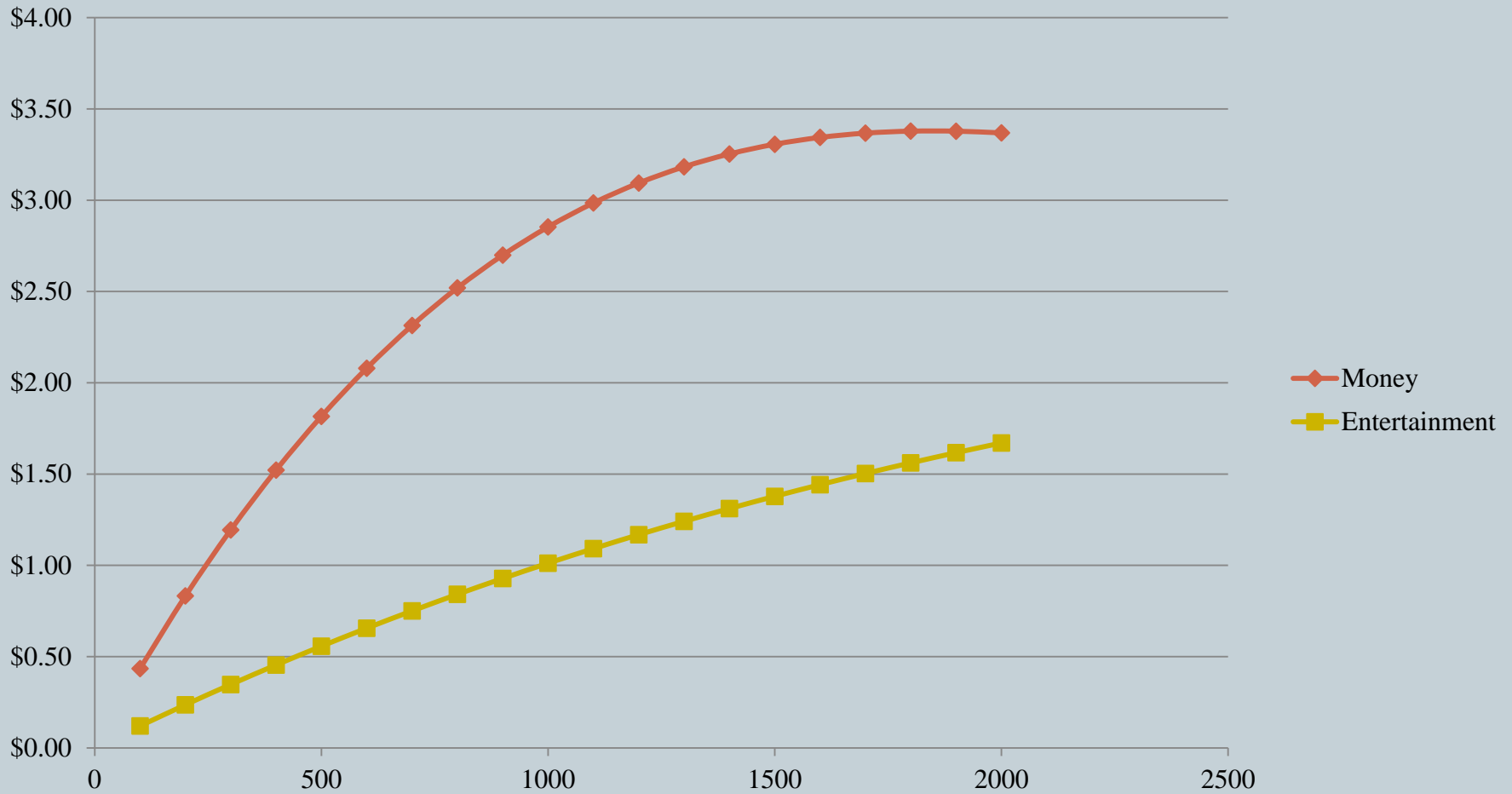
	Money	Entertainment	Difference
Regulation	\$5.68*** (0.84)	\$6.73*** (1.54)	-\$1.06 (1.75)
Security	\$6.03*** (0.86)	\$4.14*** (1.63)	\$1.89 (1.85)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

WTP: Network Effects (Micro Stakes)

by Player Motivation



Policy Experiment #1

Agreement between Two Small States



	<u>Players</u>	<u>Micro</u>	<u>Small</u>	<u>Mid/High</u>	<u>Total</u>
State A	100 (50) ⁺	\$0.31	\$1.13	\$3.06	
State B	100 (50)	\$0.31	\$1.13	\$3.06	
Compact	200 (100)	\$0.59	\$2.16	\$5.85	
<u>Marginal Value per Hour per Player⁺⁺</u>					
State A		\$0.28	\$1.03	\$2.79	
State B		\$0.28	\$1.03	\$2.79	
<u>Total Value Added per Hour⁺⁺⁺</u>					
State A		\$28	\$103	\$140	\$271
State B		\$28	\$103	\$140	\$271
<u>State Share</u>					
State A		50%	50%	50%	50%
State B		50%	50%	50%	50%

*All values are measured in \$/hour using hypothetical peak traffic counts.

⁺Number of Micro or Small-Stakes Players (Number of Middle/High Stakes Players)

⁺⁺Increase in the amount a player is WTP because of agreement.

⁺⁺⁺Product of marginal value and the number of Players in state.

Policy Experiment #2

Interstate Agreement: Small & Large State



	<u>Players</u>	<u>Micro</u>	<u>Small</u>	<u>Mid/High</u>	<u>Total</u>
State A	100 (50) ⁺	\$0.31	\$1.13	\$3.06	
State B	100 (50)	\$2.09	\$7.30	\$19.59	
Compact	200 (100)	\$2.20	\$7.62	\$20.42	
<u>Marginal Value per Hour per Player⁺⁺</u>					
State A		\$1.89	\$1.03	\$17.36	
State B		\$0.11	\$1.03	\$0.83	
<u>Total Value Added per Hour⁺⁺⁺</u>					
State A		\$189	\$649	\$868	\$1,706
State B		\$110	\$160	\$415	\$685
<u>State Share</u>					
State A		63%	80%	68%	71%
State B		37%	20%	32%	29%

*All values are measured in \$/hour using hypothetical peak traffic counts.

⁺Number of Micro or Small-Stakes Players (Number of Middle/High Stakes Players)

⁺⁺Increase in the amount a player is WTP because of agreement.

⁺⁺⁺Product of marginal value and the number of Players in state.

Conclusions



- Players are WTP between \$0.92 and \$5.86 for Regulation
- Networks Effects highly valued
 - Low-Stakes, Entertainment players
- Players Value Security
- Pay a premium to play “Loose” Players
- Interstate Agreements important for Small states.
Pursue agreements with similarly sized states.
- Future Studies

Thank You



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