The Effects of New Jersey Online Casino Legalization on Atlantic City's Offline Casino Revenues

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Background

- 2011 reinterpretation of The Wire Act of 1961 opened states to decided on online gambling legalization
- New Jersey legalized in 2013 creating a unique research opportunity from new data
 - Online and Offline revenues before and after legalization
 - Trustworthy and not estimated
 - Same state as historic legal gambling area: Atlantic City
 - Very recent (2011-2020 and 2014-2020)
 - Overall revenue, Different games revenue (Poker, Table/Other, and Slots)



Literature Review Pt.1: Similar Studies

Split conclusions between complimentary or substitution effect

• Marionneau and Nikkinen (2018)

Mostly unapplicable results for Untied States

- Old laws and regulations mean different market
 - Philander (2011)
 - Philander and Fiedler (2012)

• Foreign laws and markets (Britain, Sweden)

- Philander, Abardanel, and Repetti (2015)
- Arvidsson, Sjöstrand, and Stage (2017)

Data Shortcomings

- Survey data
 - Philander, Abardanel, and Repetti (2015)
- Unreliable countries
 - Philander (2011)



Literature Review Pt.2: Helpful Studies

Important Market Characteristics

- Both in state and out of state competition
 - Shonkwiler (1993)
 - Economopoulos and Luxem (2015)
- Seasonality is a major part of market
 - Wong (2010)

• Differences in game type substation rates

- Different market segments
 - Philander, Abardanel, and Repetti (2015)
- Game features like popular nongambling alternatives
 - Teichert, Gainsbury, and Mühlbach (2017)
 - Kim, Wohl, Salmon, Gupta and Derevensky (2014)



Hypothesis and Empirical Model

Hypothesis:

- A substitution effect present will be present.
 This means LogRevO coefficient should be negative.
 - Higher competition
 - Price competitive with little differentiation

Empirical Model:

 $LogRevB = \beta 0 + \beta 1*LogRevO + \epsilon$



Variables

Independent Variables

- LogRevO = Log online revenues
- Logtourist = Log parking tax data
- Njfirms = Number NJ firms
- SummerD = Summer dummy
- SO_inter = SummerD*LogRevO
- WinterD = Winter dummy
- WO_inter = WinterD*LogRevO
- LogNJNQGSP = NJ Gross State
 Product
- OLegalD = Legalization Dummy

Dependent Variables

- LogRevB = log offline revenues
- **LogPoker** = log poker revenues
- LogTableOther = log table and other game revenues
- LogSlot = log slot revenue
- LogRevenue = log offline revenues

BOLD = suppletory study with 73 observations instead of 110 only for period 2014-2020

Summary Statistics

Decriptive Statisitcs Unedited Variables							
	B&M Total Revenue Online Revenues Atlantic City tourists						
Mean	224446256.84	13775511.18	666611.22	13.373			
Standard Error	3629345.53	1162596.40	13408.26	0.195			
Median	216142101.50	13014779	636120.50	13			
Mode	#N/A	0	715666.67	12			
Standard Deviation	38064897.05	12193413.90	140627.01	2.049			
Sample Variance	1.449E+15	1.49E+14	19775957239	4.199			
Kurtosis	-0.197	5.88E-01	0.022740127	-0.802			
Skewness	0.733	0.725	0.780	0.799			
Range	178100138	55086590	596123.33	7			
Minimum	162350669	0	448210	11			
Maximum	340450807	55086590	1044333.33	18			
Sum	24689088252	1515306230	73327234	1471			
Count	110	110	110	110			

Correlation Matrix

Table 2: Correlation Matrix								
	logRevB	LogRevO	logtourist	OLegalD	WinterD	SummerD	NJfirms	LogNJNQGSP
logRevB	1.00							
LogRevO	-0.60	1.00						
logtourist	0.94	-0.61	1.00					
OLegalD	-0.61	0.98	-0.60	1.00				
WinterD	-0.38	0.05	-0.42	0.03	1.00			
SummerD	0.52	-0.03	0.55	-0.04	-0.34	1.00		
NJfirms	-0.12	0.57	0.00	0.57	0.01	0.04	1.00	
LogNJNQGSP	-0.47	0.81	-0.50	0.78	0.02	-0.01	0.50	1.00

Main Study Visualization

Main Study Characteristics

- Uses total revenue collected from 2011-2020
- Deals with structural change starting 2013



Main Study Summary Table

- Generally High p-scores and r-squared after spec 2
- Decreasing complimentary effect as equation developed
- Negative SummerD and positive SO_Inter
- Removed WinterD and WO_inter from low p-score
- Removed OLegalD because LogRevO already a dummy

The Effe	ect of Online Ga	imbling On Offi	ine Gambling (Dependant Val	riable = LogRev	в)		
Variable	Specification							
Variable	1	2	3	4	5	6	7	
LogRevO	-0.002	0.010***	0.012***	0.012***	0.011***	0.003**	0.002***	
	(0.008)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.002)	
OLegalD	-0.077	-0.056***	-0.053**	-0.057***	-0.061***			
	(0.056)	(0.021)	(0.021)	(0.020)	(0.020)			
logtourist		0.813***	0.923***	0.933***	0.880***	0.883***	0.894***	
		(0.034)	(0.059)	(0.058)	(0.050)	(0.052)	(0.052)	
NJfirms		-0.006***	-0.008***	-0.008***	-0.007***	-0.008***	-0.008***	
		(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	
WinterD			0.009	0.009				
			(0.006)	(0.009)				
SummerD			-0.013*	-0.030***	-0.027***	-0.025**	-0.026**	
			(0.007)	(0.010)	(0.010)	(0.010)	(0.010)	
WO_Inter				0.000				
				(0.001)				
SO_Inter			[[0.003**	0.003**	0.003*	0.003**	
				(0.001)	(0.001)	(0.001)	(0.001)	
LogNJNQGSP							0.198*	
							(0.106)	
Constant	8.411***	3.689***	3.068***	3.015***	3.318***	3.298***	2.108***	
	(0.010)	(0.193)	(0.333)	(0.328)	(0.283)	(0.294)	(0.703)	
# of Observations	110	110	110	110	110	110	110	
R squared	0.372	0.914	0.919	0.923	0.920	0.913	0.916	
		***p<0.01	**p<0.05	*p<0.1				

Supplementary Study Visualization: Part 1

- Revenue mainly from slots
- Poker extremely small
- Obvious seasonality for slots
 - Less for Table
 - Even less for Poker

Total Revenue conclusions mainly apply to Slot segment



Supplementary Study Visualization: Part 2

- Slots and table games revenue have a slight positive trend
- Poker has much larger negative trend
- Slot has most seasonality followed by Table games
- Poker has no noticeable seasonality



Supplementary Study Summary Table

- Issues with p-values, R-Squared
 - Sub 100 observations
- Visual Seasonality not significant in regression
- LogRevO in both LogPoker tests was very negative
 - Positive for LogTableOther
 - Most positive for LogSlot

The Effect of Online Gambling On Offline Gambling (Dependant Variables Listed Below)						
	Specifications					
Variable	LogPoker		LogTableOther		LogSlot	LogRevenue
	8	9	10		11	12
LogRevO	-0.191***	-0.201***	0.035		0.056***	0.047***
	(0.060)	(0.052)	(0.030)		(0.012)	(0.013)
logtourist	0.473*	0.148	0.637***		0.893***	0.819***
	(0.258)	(0.133)	(0.130)		(0.051)	(0.055)
NJfirms	-0.003		-0.001		-0.006***	-0.005**
	(0.007)		(0.004)		(0.001)	(0.002)
SummerD	0.237		-0.350		-0.056	-0.142
	(0.919)		(0.462)		(0.180)	(0.196)
SO_Inter	-0.042		0.049		0.008	0.020
	(0.126)		(0.064)		(0.025)	(0.027)
Constant	5.12***	7.006***	3.835***		2.688***	3.314***
	(1.539)	(0.880)	(0.774)		(0.302)	(0.329)
# of Observations	73	73	73		73	73
R squared	0.248	0.193	0.587		0.935	0.913

Key Findings

Main Study

- Overall complimentary effect revealed by positive coefficient for LogRevO
 - Interaction Term shows complimentary effect stronger in busier summer months. Possibly due to promotional activity.
 - Referral, new player bonuses (ex. right)
 - Rewards programs ("Golden Rewards Club" or "Caesars Rewards") (ex. next slide)
 - Points earned through online play spendable offline
 - Tiered rewards granting online and offline incentivizing mixed play

Supplementary study

- reveals largest complimentary effect for slots, followed by table and other games, with poker having a substitution effect
 - Mirror conclusions made in...
 - Philander, Abardanel, and Repetti (2015)
 - Teichert, Gainsbury, and Mühlbach (2017)
 - Kim, Wohl, Salmon, Gupta and Derevensky (2014)



\$1,000 Match Bonus + 200 Free Spins!

Casino - New Players

Get up to a \$1,000 Instant Casino Match + 200 Free Spins on 88 Fortunes Megaways when you make your first deposit!



Get up to \$500 Instant Bonus!

Casino

Refer your friends and get up to \$500 in Instant Bonuses!

Example: Golden Nugget Club

- Gain points per online/offline wager
- Convert points to cash
 - 100 pts = \$1
- Spend in offline or Online
- System similar in every casino website

- Offline Incentive with each Tier
 - "complimentary perks"
 - "exclusive invites"
 - Other websites include Line skipping, free valet and buffets, Hotel discounts and more

Golden Rewards Club	VIP Rewards Club	VIP Elite Club		
0 - 4,999 Golden Points	5,000 Golden Points	By Invite Only		
Exchange your points for Cash	All advantages of the Golden Tier Rewards	All advantages of the VIP Tier Rewards		
Daily, Weekly, and Monthly bonus offers	Expedited Withdrawals	Enhanced promotional offers		
Birthday offers	Weekly VIP Cashback & Exclusive Promotions	Exclusive invites to Events & Tournaments		
Leaderboard Giveaways	Complimentary perks at Golden Nugget Atlantic City	Luxury Gifts		
24/7 Customer Support	5 Star VIP Support	Personal VIP Host		

Discussion and Recommendations

