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THE EFFECTS OF CASINOS ON UNEMPLOYMENT:

A COUNTY LEVEL ANALYSIS

A Thesis Submitted

In Partial Fulfillment

of the Requirements for the Designation

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Abstract

The gambling industry in the United States has experienced significant growth over the past thirty years. As the industry continues to expand, legislators must consider the pros and cons that accompany the industry expansion. This paper examines if the social and economic benefits from the casino industry outweigh the social and economic costs of gambling with a specific focus on the effects on unemployment. The gaming industry creates tax revenue, employment, and entertainment for the community. But it also has a regressive tax structure and creates problems like pathological gambling. This paper analyzes this tradeoff and uses Ordinary Least Squares regression to determine if the presence of a casino has any statistical significance on the unemployment rate in counties of Iowa. The regression finds statistically insignificant results and can neither confirm nor challenge the claim that unemployment is lower in counties with a casino.

I. Introduction

The American Gaming Association defines gambling as "placing something of value at risk on the outcome of an uncertain event" (2019). Gambling ranges from betting on a hand of blackjack to buying a lottery ticket. These two activities are classified differently. The casino industry has both games of skill and non-skill. Skill games include games that the player can influence the outcome, such as poker or blackjack. Non-skill games are those based solely on chance such as slots or roulette. The gaming activities recognized in this paper include both types of games with an emphasis on the casino industry. In the casino industry, there are many factors at work to influence a population to gamble. A person's income, proximity to the casino, the casino's amenities, the adult population, and the entertainment variety all influence the population's propensity to gamble. Casinos are often marketed as a destination or event. Many casinos host concerts and shows to entice people to come to their venue, where the crowd will likely spend time at the slot machines or blackjack tables as well. These activities provide a benefit to the public as they serve as a source of entertainment and employ many people.

The size of the commercial casino industry in the United States increased dramatically over the last 20 years (Cotti 2008). In 2017 there were 460 commercial casinos across twenty-four states (American Gaming Association 2019). It is still on the incline as we see the emergence of new markets such as online gambling and sports betting. The gaming industry boasts high numbers of positive economic effects that the industry has on the nation. These positive effects include employment and tax revenue. Although the casino industry markets the positive effects of casinos on employment, the casino industry may be taking jobs away from other entertainment industries, thus having a net negative impact on employment. The regression

in this paper will provide an in-depth analysis of the correlation between unemployment rates in

Iowa counties and the existence of casinos in that county to determine if there is statistical

evidence of the commercial casino industry lowering unemployment rate. Ultimately the results

show there is no credible evidence that a commercial casino has any impact on the

unemployment rate, but there is also no proof that it does not.

        As of 2017, there were a total of nineteen commercial casinos in the state of Iowa. These

casinos are located across the state as shown below (Iowagaming.org 2019).

The casinos offer games such as poker, blackjack, slots, and roulette. The many casino locations

across the state allow for a tight gambling market or easy access to gambling for the population

across the state. The access to casinos is hypothesized to have an impact on a gambler's

propensity to gamble or how often they place a wager on a game. The greater the ease of access

to a casino the higher a gambler's propensity to gamble. This concept is especially relevant given

the current gambling climate moving towards increased access through online gambling. For lawmakers to justify this increase in gambling the benefits must outweigh the costs.

II.   Background

History

American gaming is a controversy dated all the way back to its roots. In 1638, the Puritans in Massachusetts used the Idleness Statute of 1963 to create America's first law against gambling. It outlawed the possession of cards, dice, and gambling devices in opposition to unproductive time, or idleness. The lawmakers saw gaming as a waste of time and an unnecessary activity. In New Jersey in 1748, the government passed an act similar to the one of the Puritan's claiming gambling led to fraud and corrupted youth. Legislation to follow included such phrases describing gamblers as "parasites and thieves" (Fenich 1996). While the legislation has completely changed, there is still a controversy around the legalization and taxation of gambling and gaming activities.

The deepest roots of American casinos as known today are in Las Vegas, New Orleans, and Atlantic City. These cities were some of the first to allow casinos and became destinations for gaming. Las Vegas specifically has always been the epicenter of gambling in the United States. Until recently it was the only state to regulate sports betting. Gambling in America is still laced with controversy. To this day there are only twenty-four states that allow commercial casinos (American Gaming Association 2019). A 2018 Supreme Court ruling on wagering on sports opened the door for all states to allow sports betting inside of casinos. Many states have legislation in place with votes pending to fully legalize sports gambling. As of August 2019, Iowa opened sportsbooks in many casino locations becoming one of the first states to do so

(Lawhon 2019). Iowa has always been at the forefront of states to legalize gambling. In 1991, Iowa opened the first riverboat casino in the country. Even with the recent boom in the casino industry there is still controversy over the social costs and economic benefits from the gambling industry.

Regressivity of Casino Tax

The American tax system is primarily based on the principle of progressivity. A progressive tax works proportionately. The more income an individual has, the higher tax the individual pays. Generally, those with a high income can afford to pay more in taxes. Income taxes are a progressive tax; as an individual increases their income, the individual moves up in the tax bracket thus pays a higher percent of tax. Another tax structure is a flat rate tax. A sales tax is an example of a flat rate tax. Every person pays the same percentage per item bought regardless of their income. People with a higher income will likely buy more goods. Even though the percentage people pay on each good remains constant, they buy more goods, so they end up paying more in taxes. Thus, even a flat rate tax structure can be a progressive tax. The final tax structure is a regressive tax. A regressive tax is one that taxes lower income individuals at a higher rate. One large concern is that the taxation of gambling is a regressive tax. This means that the burden of the tax falls on the poor, or those who are least able to afford it.

Because gambling is a voluntary activity, the tax is a voluntary excise tax. In other words, the tax falls on those who are willing to pay for the good. People with a high income also likely have a high discretionary income. Discretionary income is income after taxes and all necessary bills such as groceries and transportation expenses. Discretionary income is usually either saved or spent on things like entertainment or luxury items. It is logical to assume that when

discretionary income increases, that the money spent on gambling would increase. Unfortunately, this is not always the case. The lower class are consistently found to be the population involved in gambling, thus they are the ones paying the taxes.

Many argue this is not a fair or equitable form of government revenue. According to Smith (2002), "Older people, men, the undereducated, and minorities all spend more on lottery tickets than their respective counterparts." While the same has not been proven for the casino industry it is likely that similar demographics take part in gambling across all gambling industries. For the most part, minority populations have borne the burden of the costs of gambling. The taxation and gambling problems that accompany the casino industry often fall heavily on the low-income population. The Native American population is the anomaly. The Native Americans benefit from casinos through revenues and employment opportunities.

Pathological Gambling

In 1980, for the first time the American Psychological Association listed pathological gambling as an official mental disease or disorder (Fenich 1996). This is not something to be taken lightly. According to the NorthStar Alliance of Problem Gambling (2013) around one in five compulsive gamblers will attempt suicide at some point during their addiction. This rate is nearly double other addictions. Psychology Today lists symptoms of pathological gambling including, "Need to increase amount wagered to achieve same level of excitement, restlessness or irritability when attempting to cut down or stop gambling, lies to conceal the extent of involvement with gambling, putting significant jobs or relationships in jeopardy due to gambling." The social costs of problem gambling are not limited to the gambler himself. Just like any other addiction to alcohol or drugs, gambling addiction affects everyone around the person

involved. Pathological gambling also tends to lead to other disorders or addictions, "73% of pathological gamblers in the USA have alcohol use disorders" (Westphal and Johnson 2007). It is not known what the causal relationship between alcohol and gambling really is. Alcoholics may tend to be pathological gamblers, or pathological gamblers may tend to be alcoholics. No matter which direction this relationship goes, there is a correlation between the two.

Proximity

Iowa has a tight gambling market. All counties have a casino available within a thirty to sixty-minute drive. The proximity of a casino to consumers is found to be an important factor in the amount of money wagered at casinos. The distance to the casino that a person must drive is without a doubt a contributing factor in the decision to gamble. If a person lives thirty minutes away from Las Vegas that person is likely to gamble more often compared to a person living in Alaska which is a state without any land-based casinos. This is especially important in the conversation of online gambling. Online gambling is a recent industry that has exploded due to technological advancements. This phenomenon completely throws the concept of proximity out the window. When someone can pull a phone out of their pocket and place a bet or play a game virtually, the access is instant. Iowa currently allows residents to create online gambling accounts at their nearest casino and play online once registered. This online access is very recent and has only been in place for three full months. In the first full month of operation, Iowa sportsbooks found that 89.2% of all wagers came from mobile betting (Lawhon 2019). The long-term effects of online gambling are not yet known, but it is hypothesized that the existence of legal online gambling in Iowa will increase the number of gamblers in the state significantly. In order to fully

understand the consequences of such legislation, studying the effects of proximity changes is important.

Online gambling can be done more discreetly, thus making it a better option for pathological gamblers trying to hide their addiction from family and friends. Not having to physically drive to a casino also may be a push over the edge of convenience that would cause casual gamblers to begin gambling more frequently. Iowa is one of the few states that does not allow fantasy sport-based games of skill such as DraftKings or FanDuel. The option to gamble at a casino's sportsbook, however, has filled the void of not being able to play daily fantasy sites for Iowa sports fans. Sports gambling is known for the extra entertainment and excitement added to casual sports watching. State governments jumped at the opportunity to grow their gambling markets and create new revenue sources by creating sportsbooks. They may not have considered what kind of access this gives gamblers. Previously, the only way to legally gamble on sports was traveling to the Las Vegas sportsbook. The new legislation creates a whole new world of betting and increases the proximity like never before. The social and economic effects of these proximity changes must be further considered by lawmakers.

Tax Revenue

Often the strongest argument for gambling lies in the tax revenue that gambling activities generate. The American Gaming Association reported the gross revenue generated from gambling taxation in 2017 was $9.23 billion (2019). Where does the tax revenue go? Some states have the tax revenue earned from gaming 'earmarked', meaning the tax goes towards something specific. For example, in Nevada the gaming industry generates over a third of all funding for Nevada's public schools. The tax appropriations for the twenty-four states that allow commercial

casinos differ. Lawmakers usually pass gaming legislation based on appealing to what each state needs funding for whether it be for environmental causes or education. Lawmakers justify the costs of gambling with the idea that the dollars raised are going to a good cause.

The Iowa Gaming Association slogan is "Providing Economic Development Through Entertainment". There is no doubt the tax revenue generated through the gaming industry generates a lot of money for each state. The Iowa Gaming Association provides a breakdown of the appropriations of the tax dollars generated by gaming activities. The 2018 estimated appropriations included Environment First Fund $42 million, Rebuild Iowa Infrastructure Fund (RIIF) $105.7 million, Technology Projects $10 million, Iowa Skilled Worker and Job Creation Fund $66 million, Revenue Bonds $55 million, and other miscellaneous funds. The estimated tax revenue generated from Iowa gaming totaled $322 million in 2018 (Iowa Gaming Association 2019).

The possibility of tax revenue is the most enticing component of gambling to lawmakers. By legalizing sports betting, policy makers strike down illegal black-market activity and bring in a new source of revenue. For these reasons, many state governments are eager to bring a sportsbook to their state. The revenue from these sportsbooks are likely to increase the total tax revenue in upcoming years. Revenues in the state of Iowa for the first full month the state had operating sportsbooks totaled $4,956,347 with a total of $38.5 million wagered on bets for the month of September 2019 (Lawhon 2019). The new legislation is proving itself to be a lucrative investment.

Unemployment

An economic benefit of the gaming industry is the number of jobs it brings to the country. The American Gaming industry boasts high employment numbers. They offer employment for many people across the country. In 2017, The American Gaming Association reported that the gaming industry provided 1.8 million jobs nationwide. Of those 1.8 million jobs 737,000 are supported by the commercial casino industry (American Gaming Association 2019). These jobs supported by commercial casinos are considerably more than a comparable entertainment industry such as movie theaters in the US. According to IBIS*World*, in 2017 the movie theater industry supported 154,000 jobs (Miller 2019).

Walker (2008) argues that since a casino opening offers such large increase in demand for labor, it pushes average wages to a higher level. This benefits not only those employed by the casino, but also the surrounding labor market who will see wages go up. The emergence of online gambling may put some of those jobs in jeopardy in the coming years. Alternatively, the emergence of legal sports betting will create a market for employees at newly opened sportsbooks. The American Gaming Association estimates that sports betting will create an additional 150,000 jobs in the United States.

Amber Irlmeier (2014) and Chad Cotti (2008) have both studied the effects of casinos on unemployment. Cotti provided the first ever county level study. His study spanned all 161 counties that have commercial casinos, looking at the unemployment rates, among other variables, before and after the casino was introduced. He found "casinos lead to more employment and in some instances higher earnings" (2008). Cotti concludes that casinos do in fact lead to economic growth.

Irlmeier had similar results. In her study she used 8 midwestern states and data from 56 cross sections (casinos) in 23 time periods (1990-2012). The resulting model was as follows:

COUNTY_UNEMP = β_0 + β_1 STATE_UNEMP + β_2REAL_PCI + β_3WHITE + β_4TEEN +

β_5OVER65 + β_6POP_DENSITY + β_7COUNTY_POP + β_8POP_CHANGE + β_9

CASINO_DUM + ε

The results of this model were in support of casinos. She concluded that "casinos are correlated

with a reduction in county unemployment" (Irlmeier 2014).

Entertainment

Walker (2010) discusses the consumer and producer surplus in the gambling market.

Walker notes that the consumer has a high willingness to pay for a lottery ticket. Not only

because the consumer believes he will win, but the consumer experiences a rush of excitement

from the game. For many, gambling is a form of entertainment. In games of skill or not, people

enjoy the excitement of waiting in anticipation for the cards to flip or the dice to land. The

consumer pays for this experience just as he pays for a ticket to see a movie or baseball game.

Gambling, however, differs from these events because there is the possibility of earning

something of monetary value in return. Watching a movie provides entertainment, but gambling

provides entertainment along with a possible payout which gives the opportunity for more

entertainment. This is a cycle that most gamblers go through. Unfortunately, "almost all of the

bets available in U.S. casinos have negative expected values" (Walker 2010). On average, you

are expected to lose the money you place on a bet in a casino. While there is excitement

surrounding the possibility of winning, that is not the only reason people gamble. If a gambler

knows the odds are against him and he still plays, he is playing for the experience.

III.   Theory

Instead of a time series model as used by Chad Cotti (2008) and Amber Irlmeier (2014), I

conduct a cross sectional study of all 99 counties in Iowa to analyze the effects of casinos on

unemployment rates. Like Irlmeier's model, I use County Unemployment as the dependent

variable and independent variables of Income, White, Over 65, County Population, and a Casino

dummy variable. My model will not include all the variables included in Irlmeier's model. Due

to the nature of the cross-sectional data, I omit variable Population Change because the data

collected is from one time period. I also omit variable State Unemployment because all the

observations are from the state of Iowa, therefore the state unemployment values would remain

constant for all observations. Additionally, I omit Teen, or the population percentage of

teenagers in a county, and Population Density due to data availability. This results in the

following model:

$$\text{County Unemployment} = \alpha_0 + \beta_1 \text{Population} + \beta_2 \text{Income} + \beta_3 \text{White} + \beta_4 \text{Over65} + \beta_5 \text{Casino} + \varepsilon$$

IV.   Data and Variables

All data for this cross-sectional study was taken from the 2017 American Community

Survey ("ACS-17") conducted by the Census Bureau. The variables below were combined into a

data set which was used to run an Ordinary Least Squares regression. To run this regression I use

R, a program for statistical computing.

Dependent Variable

UNEMPLOYMENT: The annual unemployment rate in an Iowan county in 2017 (ACS-17)

Independent Variables

POPULATION: The number of people living in an Iowan county in 2017 (ACS-17)

CASINO: A dummy variable representing the presence of casinos in an Iowan county, equal to 1 if there is a casino present and 0 if there is no casino present (American Gaming Association 2019)

INCOME: The median household income in an Iowan county in 2017 (ACS-17)

WHITE: The population percentage of white people living in an Iowan county in 2017 (ACS-17)

OVER65: The population percentage of people age 65 and over living in an Iowan county in 2017 (ACS-17)

V. **Results and Discussion**

The following results were generated from the statistical computing program R using Robust Standard Errors:

	Estimate	Robust Std. Error	t value	Pr(>|t|)
Intercept	-2.85	12.76	-0.223	0.82379
Population	0.000001349	0.0000009563	1.4	0.16185
Income	-0.00003241	0.00001161	-2.792	0.00636
White	7.799	12.65	0.616	0.53916
Over65	-0.116	4.446	-0.026	0.97924
Casino	0.07955	0.1946	0.409	0.68366

This R output estimates the following equation for County Unemployment:

County Unemployment = - 2.85 + 0.000001349 POPULATION - 0.00003241 INCOME + 7.799 WHITE - 0.116 OVER65 + 0.07955 CASINO

According to the model, 10.88% of the variation in the County Unemployment rate can be explained by the independent variables. The p-value of the Ordinary Least Square regression is 0.005229. This result supports the rejection of the hypothesis that the independent variable's coefficients are equal to zero at the 5% significance level.

Population

I expected the coefficient for Population would be ambiguous because as the population rises competition for jobs also rises, thus the unemployment percentage should also rise. However, as the population rises, business opportunities also rise, which brings more jobs to the area. We see in the results that while the relationship is positive, it is not statistically significant at the 5% level with a p-value of 0.16185.

Income

As expected, there is a negative relationship between the median household income and the unemployment rate. As the median household income rises, the unemployment rate falls. This variable is the only statistically significant variable in the model with a p-value of 0.00636. Demand for output rises as income rises and thus lowers the unemployment rate, making Income an important determinant of the unemployment rate.

Casino

I expected there would be a negative relationship between the presence of a casino and the unemployment rate. The casino industry boasts high job creation numbers and how many people they employ. I suspected the job creation of casinos would negatively impact the unemployment rate. The resulting coefficient is positive, but the results are statistically insignificant with a p-value of 0.819961. Therefore, I can make no conclusion regarding the impact of casino's presence on the unemployment rate at the 5% level of significance.

White

This variable was expected to be negative, as whites typically have a lower unemployment rate than non-whites (Irlmeier 2014). The resulting coefficient is positive but is not statistically significant with a p-value of 0.53916, therefore no conclusion can be drawn from the results at the 5% level of significance.

Over65

I expected the population percentage of people over 65 would be negative because the larger this population, the smaller the labor force which would decrease the unemployment rate. While the coefficient for Over65 is negative, the results are statistically insignificant at a 5% significance level with a p-value of 0.97924.

Multicollinearity

To test the model for multicollinearity, I calculated the Variance Inflation Factors of the independent variables. Since the values of VIF for all independent variables are less than 10, as shown below, we can assume the estimates of the model are relatively stable, and there is no problem of multicollinearity.

VIF:

Population	Casino	Income	White	Over65
1.663865	1.188485	1.415429	1.070969	1.991583

Heteroskedasticity

To test the model for heteroskedasticity, I use the Breusch-Pagan test and find that there is no heteroskedasticity present. The lack of heteroskedasticity allows for OLS to still be the *Best Linear Unbiased Estimator*, or that the model estimates the equation with the least variance, and that the variance is constant. At the 5% significance level I fail to reject the null hypothesis that there is homoskedasticity present because the calculated p-value of .392 is greater than 0.05. Therefore, with 5% significance this test does not show signs of heteroskedasticity. As a precaution, my final results are calculated using Robust Standard Errors in the model.

VI.   Conclusion and Future Research

My regression showed the presence of a casino in a county has no statistical significance on the county's unemployment rate. According to these results, I can neither confirm or challenge the casino industry's claims that the industry creates jobs and reduces unemployment. Although casinos create jobs in the community, other jobs in the entertainment industry may be replaced by these jobs. Thus, there is no net job creation. However, in this study, the net effects were not calculated to be statistically significant so there is no conclusive evidence in either direction.

Previous research in the field has studied the employment effects before and after the introduction of casinos. None, however, have used a proximity variable to analyze the effects of casinos. Understanding the consequences of the accessibility of casinos on the surrounding population will offer insight to the social costs and economic benefits of casinos. This work would be especially relevant given the current climate of online gambling. Examining the consequences of the increasing accessibility of gambling would be important for lawmakers to

consider in coming years. Therefore, future research should add in a proximity variable that

measures the average distance to the casino.

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