Future Casino Tax Yields: What Recent Trends in Casino Wagering and Attendance Suggest

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This article considers and investigates the future growth potential of the state's wagering taxes. Gaming markets in many states that legalized casino gaming in the 1990s have matured, so the days of extremely robust annual revenue growth may be on the wane. Revenue growth looms large in Indiana as the wagering tax has become a major source of funding for the state's property tax relief program. In 2008, about $486.3 million in revenue from the riverboat wagering tax was directed to property tax relief. What's more, all revenue from the separate racetrack casino wagering tax is dedicated to property tax relief. Note that all years referenced in this article are fiscal years unless otherwise noted.[1]

We first examine the historical growth patterns in attendance and wagering at Indiana's riverboat casinos. By analyzing the win—the base for the wagering tax—instead of wagering tax revenue, we eliminate problems with measuring tax rates and the impact of changes in tax rates over time.[2] Analyzing casino attendance helps to delineate growth in the win that's attributable to income growth versus growth attributable to capacity expansion and market share growth. This is critical because if the markets in Indiana have matured, the annual growth in the wagering tax base will come from the underlying growth in the average win per gambling patron.

In addition, this article examines the response of the wagering tax base to economic change and how casino gaming in bordering states could affect business at Indiana casinos. Both are critical issues in and of themselves relating to the future growth in gaming revenue.

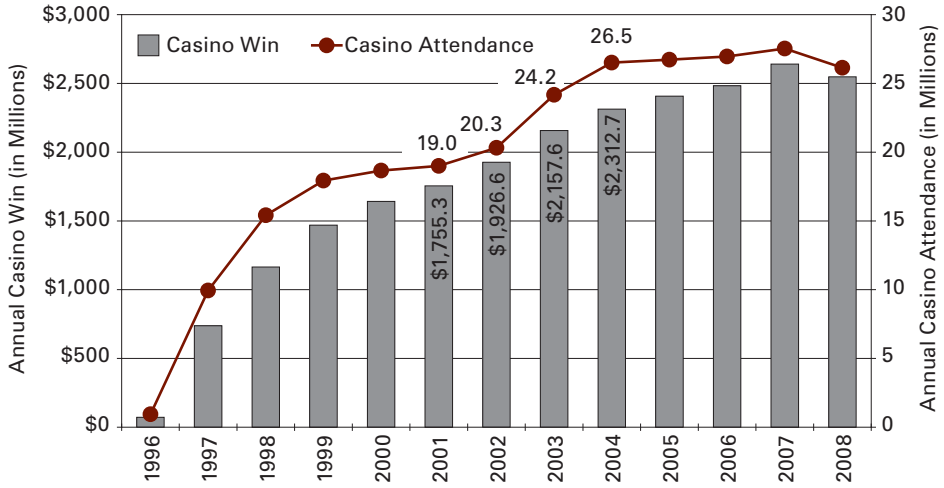
Recent Patterns in Casino Win and Attendance

During 2008, 26.2 million people gambled at Indiana's eleven riverboat casinos, generating about $2.6 billion in win. The 2008 attendance and win levels are a long way from the first, albeit partial, year of casino operations in 1996 when roughly 944,000 gamblers generated a win total of about $71.9 million. **Figure 1** reports annual attendance and win totals for the riverboat casinos.

Annual attendance and win grew dramatically in the 1990s, exhibiting a year-to-year pattern similar to the growth patterns for electronic gaming devices (EGDs) and table games discussed in the previous article ("The Two-Sided Coin: Casino Gaming and Casino Tax Revenue in Indiana"). While lagging the supply trends, the trajectory of the attendance and win series also exhibits a rapid leveling off in recent years. From 1997 to 2008, the casinos registered average annual growth for attendance and win of 9.2 percent and 11.9 percent, respectively. However, the annual growth rates for particular years vary significantly around these averages. The leveling in the attendance series and the win series is quite discernible beginning in 2004 once the impact of dockside gaming had registered fully.

Contrasting the two growth periods, attendance increased at a 15.4 percent average annual rate from 1997 to 2002, but dropped to about 1.6 percent on average from 2003 to 2008. Similarly, annual growth in the win averaged about 21.2 percent from 1997 to 2002, but fell to about 3.4 percent from 2003 to 2008. The year-over-year growth rates also have generally declined each year with the most recent years below the average for the period. Annual attendance growth fell from 9.7 percent in 2004 to 0.8 percent in 2005 and 0.9 percent in 2006. The win has followed a similar pattern, with annual growth rates falling from 7.2 percent in 2004 to 4.1 percent in 2005 and 3.1 percent in 2006. Both attendance and win declined in 2008, with attendance declining by 5.1 percent and win declining by 3.5 percent. 2007 represents the outlier during this period because of the opening of the French Lick Casino. Excluding the French Lick Casino from the calculations, 2007 attendance at the remaining ten casinos actually declined by about 1.6 percent (some

Figure 1: Annual Casino Attendance and Casino Win, 1996 to 2008



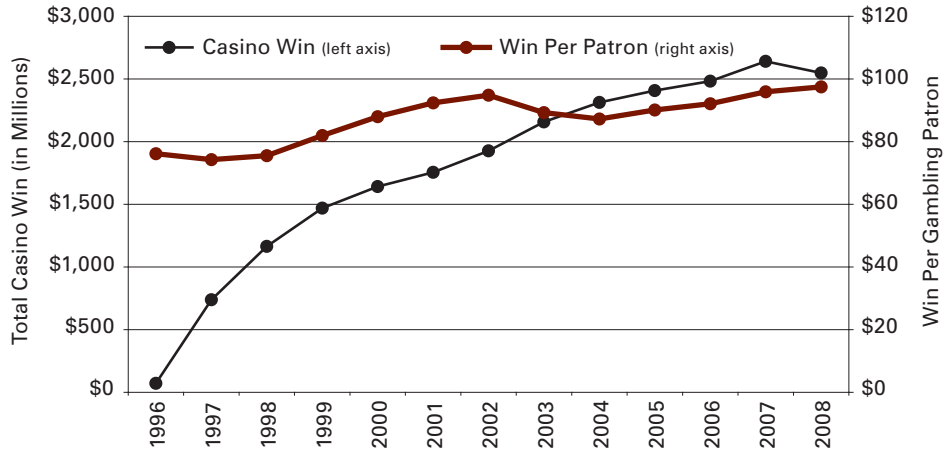
Source: Indiana Gaming Commission

of which may have resulted from attendance shifting from existing casinos to French Lick). However, the 2007 win rebounded slightly from 2006 to register a 3.6 percent growth rate.

The data indicate that the impact of dockside gaming on attendance and win was significant. While the average amount wagered per gambler wasn't expected to increase, the aggregate amount wagered was expected to rise as more gamblers cycled through the casinos each day. The upward shift in annual attendance following the implementation of dockside gaming is discernible beginning in 2003, but is even more noticeable in 2004, which was the first full fiscal year for dockside operations. Compared to 2002, overall attendance was 19 percent higher in 2003 and 30.5 percent higher in 2004.[3] Likewise, the aggregate win was 12 percent higher in 2003 and 20 percent higher in 2004 compared to 2002.

While the aggregate win grew by 11.9 percent per year on average from 1997 to 2008, the average win per patron grew by only 2.5 percent per year during this period (see **Figure 2**). The gap in the growth rates surfaced primarily between 1997 and 2002, when growth in the win averaged about 21.2 percent per year but the win per patron grew by only about 5 percent per year. Since 2003, however, average annual growth in the win has fallen precipitously and the gap between annual growth in the win and the average per patron win has closed almost entirely. Since 2003, average annual growth in the win has registered 3.4 percent while the average per patron win has grown by only 1.8 percent per year. This suggests that the radical year-over-year growth in win during the 1990s was largely due to capacity increases and market expansion via casino start-ups. The statistics indicate that less than a quarter of the annual growth in win during that period was due to year-over-year growth in the win per patron. Now, with the casinos serving relatively mature and stable markets, annual growth in the aggregate win will rely almost entirely on growth in the average win per patron. Based on the average per patron win, the resulting growth could be little more than 1 percent to 2 percent per year.

FIGURE 2: Annual Aggregate Win and Win per Gambling Patron, 1996 to 2008



Source: Indiana Gaming Commission

The Income Elasticity of the Wagering Tax Base

The income elasticity of the win provides the best indicator of how revenue generation by the casinos has changed and where it may be going. As with purchases of other goods and services, personal income represents the main economic variable that drives casino attendance and wagering levels.[4] The income elasticity of the win measures the percentage change in the win due to a 1 percent change in personal income. In the aggregate, Indiana personal income grew by an average 4.3 percent per calendar year from 1996 to 2007.[5] The aggregate win generated by the riverboat casinos grew by an average of 11.9 percent from 1997 to 2008 (roughly the same period). This suggests a rather large income elasticity of 2.8, implying that a 1 percent increase in personal income leads to a 2.8 percent increase in the win.[6] However, this fails to control for the impact of rapid supply growth that led to radical year-over-year growth in casino attendance and win during the 1990s. Remember, from 1996 to 2001, the supply of casino gaming in Indiana grew from zero to ten riverboat casinos, over 16,000 EGDs, and almost 700 table games. Thus, comparing the aggregate totals after 2002, or comparing the win per patron with per capita personal income, provides an elasticity measure that isn't biased by the supply and market expansion during the 1990s. While personal income grew by an average of 4.1 percent per calendar year from 2002 to 2007, the 2003 to 2008 growth in win averaged about 3.4 percent. This implies that the income elasticity is really about 0.8. Comparing the average win per patron with per capita personal income (PCPI) confirms this result. PCPI grew by an average of 3.6 percent per calendar year from 1996 to 2007 while the win per patron grew by an average of 2.5 percent per year from 1997 to 2008. This implies an income elasticity equal to about 0.7.[7]

A couple of recent studies of the long-run and short-run income elasticity of casino win confirm these results. The long-run elasticity focuses on the trend in the win,

measuring the relationship between the trend in the win and the trend in personal income. The short-run elasticity, however, focuses on deviations from the long-run trend due to short-term fluctuations in the business cycle, measuring whether wagering is cyclical or counter-cyclical.

Landers (2008a) utilizes aggregate quarterly win and attendance totals for the riverboat casinos in Indiana and quarterly Indiana personal income estimates to forecast the win generated by the casinos. Since wagering could vary with changes in demand for gambling, the forecast model focuses on the relationship between the win and personal income. The forecast model also accounts for the impact of supply changes on the win, using quarterly casino attendance as a proxy for the impact of supply changes on the aggregate quarterly win. Using a quarterly series running from 1997 to 2004 and 1997 to 2005, Landers generates statistically significant income elasticity estimates ranging from 1.35 to 1.55. When the estimating series is shortened, beginning in 2000 or 2001 and running through 2005, the income elasticity estimates remain statistically significant but fall to a range of 0.49 to 0.57. Thus, without the confounding effects of casino start-ups, market expansions, and deregulatory policies that occurred until the early 2000s, the actual income effects are more discernible and potentially are not so robust.

Tosun and Nichols (2008) confirm that the long-run income elasticity in mature casino markets may be considerably lower than in new markets. They estimate the income elasticity in eleven states. The data encompasses all quarters of casino gaming in nine of the states going back to the 1990s, and goes back as far as the mid-1980s for Nevada and New Jersey. Tosun and Nichols generate statistically significant income elasticity estimates for eight states where casino gaming began during the 1990s. The estimated elasticity values average about 1.4, and range from about 0.9 to 2.0. In contrast, the elasticity estimates for Nevada and New Jersey, where the casino markets were relatively mature by the 1990s, equaled 0.22 and 0.38, respectively.

Understanding the potential short-run effects of an economic downturn on Indiana's wagering tax base are, however, equally as important as understanding the long-run growth patterns. On this subject, the information is scant. The 2000 to 2001 period is the only time until recently that an economic slowdown has occurred while Indiana has had casino gaming.[8] Unfortunately, still-maturing casino markets coupled with the startup of Belterra Casino in October 2000 masked any cyclical behavior of the wagering tax base. In addition to their long-run elasticity estimates, Tosun and Nichols also use their eleven-state sample to provide illuminating estimates of the short-run income elasticity of casino win. Six of the income elasticity estimates they generate are statistically significant and range from 0.86 to 1.95, with the high being the estimate for Indiana. The Indiana estimate suggests that the wagering tax base is cyclical and highly responsive to cyclical economic change, with a 1 percent decline in real personal income resulting in a decline in the wagering tax base of 1.95 percent. A 1.95 percent decline in the wagering tax base could result in a loss of wagering tax totaling about $14.2 million based on the average tax rate paid by the casinos. However, the revenue loss could be higher to the extent that the base decline is skewed to casinos paying the highest marginal wagering tax rate. In 2008, Indiana real personal income declined by about 1 percent.[9] Tosun and Nichols' short-run estimate for Indiana indicates that the wagering tax base should have declined by about 2 percent. In fact, actual win declined by 3.5 percent, suggesting Tosun and Nichols' research may underestimate the impact of cyclical downturns on the wagering tax.

The Potential Impact of Cross-Border Competition

Research by various sources suggests that riverboat casinos, like those in Indiana and other Midwestern states, tend to serve spatial markets of 50 to 100 miles, with the preponderance of patrons traveling less than 50 miles to visit a casino. Gazel and Thompson (1996) interviewed casino patrons in Illinois, finding that 50 percent of the interview subjects resided within 25 miles of the casino they visited. An additional 35 percent of the casino patrons resided between 25 and 50 miles of the casino they visited. Less than 5 percent of the interview subjects traveled more than 100 miles to visit a casino.[10] The Illinois Gaming Board (1997) performed similar survey research that suggested that about 62 percent of Illinois casino patrons lived within 50 miles of the casino they visited.[11] Over half of these casino patrons lived within 25 miles of their preferred casino. Relative to Indiana, Przybylski et al. (1998) found that only about 4 percent of patrons at the casinos on the Ohio River in Southern Indiana traveled more than 120 miles to visit one of the casinos, and only about 3 percent of patrons at the casinos in Northwest Indiana traveled more than 60 miles to visit a casino.[12] Consequently, the fact that ten of eleven riverboat casinos are located on Indiana's borders suggests that a significant proportion of gamblers visiting Indiana casinos reside in surrounding states.[13] **Figure 3** shows the locations of Indiana's eleven riverboat casinos and two new racetrack casinos.

Przbylski et al. (1998) estimated that Indiana residents represented about 54 percent of the gamblers

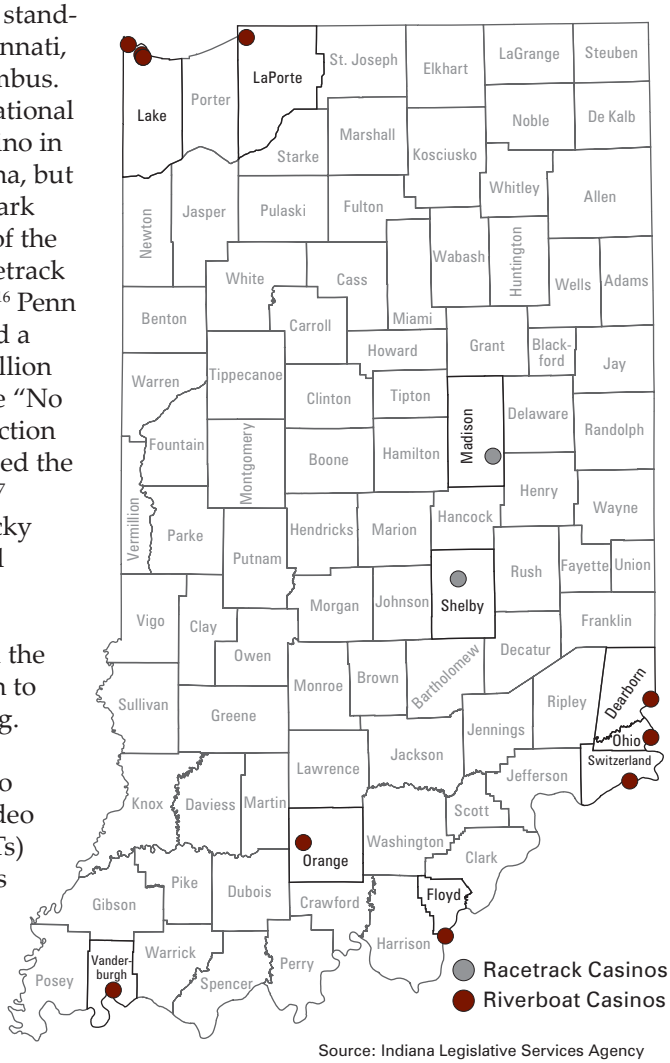
visiting the riverboat casinos on the Ohio River in southern Indiana, but represented only about 12 percent of the patrons visiting the Northwest Indiana casinos. More recently, Policy Analytics, LLC (2006) estimated that the Indiana resident share of casino patrons totals about 36 percent at the casinos on the Ohio River and about 32 percent at the Northwest Indiana casinos.[14] This clearly indicates that expansion of casino gambling in the surrounding states near Indiana's borders could interfere with the existing casino markets and significantly impact the yield from Indiana's wagering taxes.

Historically, casinos in northern Illinois have posed the only real direct competition for Indiana riverboat casinos. Casino gaming is illegal in Kentucky and Ohio and, until recently, casino gaming in Michigan was limited to commercial casinos in Detroit and tribal casinos far enough north that they did not interfere with any Indiana casino markets. This changed in August 2007, when Four Winds Casino opened in Michigan about 10 to 15 miles from Blue Chip Casino in Michigan City. Since opening, Four Winds has displaced roughly one-third of Blue Chip's business, leading to a reduction in wagering tax revenue from Blue Chip of about $27 million in 2008.[15] This illustrates how critical surrounding state competition could become if Ohio or Kentucky authorizes casino gaming. Casino gaming in either state could result in significant displacement of business and tax revenue from casinos in southern Indiana. In 2008, the six casinos in southern Indiana generated about 52 percent of the statewide win (about $1,321.8 million) and about 52 percent of the total wagering tax (about $376.9 million).

Ballot initiatives to amend the Ohio constitution and allow casino gambling were defeated in 2006 and 2008 by wide margins. Nevertheless, it appears that a new ballot initiative may be in the works for the 2009 election. Reportedly, Penn National Gaming, Inc. is spearheading a drive for a ballot measure to legalize racetrack casinos and stand-alone casinos in Cincinnati, Cleveland, and Columbus. Interestingly, Penn National owns the Argosy Casino in Lawrenceburg, Indiana, but also owns Raceway Park in Toledo, Ohio, one of the locations where a racetrack casino could be built.[16] Penn National also reported a total of almost $38 million in contributions to the "No on Issue 6" political action committee that opposed the 2008 ballot initiative.[17]

In 2008, the Kentucky legislature considered but failed to approve a ballot measure that would have amended the Kentucky constitution to legalize casino gaming. Legislation has been introduced this year to allow operation of video lottery terminals (VLTs) at seven of Kentucky's eight racetracks.[18] These locations would include Churchill Downs in Louisville, Kentucky; Ellis Park in Henderson, Kentucky (near Evansville); and Turfway Park in Florence, Kentucky (near Cincinnati). Since the proposed legislation would be an expansion of the Kentucky Lottery, it is being argued that it does not require a statewide referendum on a constitutional amendment to legalize casino gaming.[19]

FIGURE 3: Location of Indiana's Eleven Riverboat and Racetrack Casinos, 2008



Source: Indiana Legislative Services Agency

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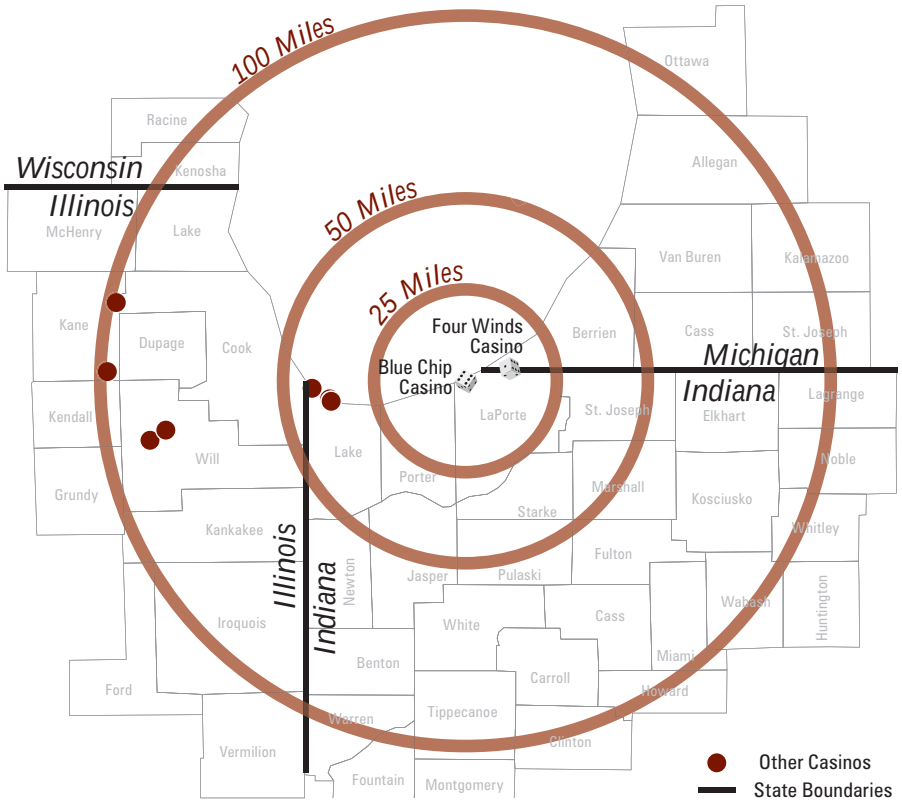
The preponderance of the impact from surrounding state competition would likely manifest itself by gamblers from those states shifting their attendance from Indiana casinos to closer alternatives in those states. Locating casinos in Cincinnati, northern Kentucky, Louisville, or near Evansville could displace a significant share of the customer base that the southern Indiana casinos serve in Kentucky and Ohio. Any patron shift predicated solely on proximity could be exacerbated if the surrounding states adopted less costly regulatory structures or lower gaming taxes. This action could serve to free-up more capital at competing casinos which could be used for better marketing, such as higher player allowances, higher pay-out rates on EGDs, and better complimentary items (or "comps") like free meals, drinks, and hotel rooms. In addition, competition from surrounding state casinos could cause Indiana casinos to "price-compete" or increase the pay-out rate on EGDs (where the pay-out rate is adjustable) to maintain their customer base.[20] This would increase the average percentage of the gross wagers paid back to gamblers,

but would decrease the win, which is the base for the wagering tax.[21] Navin and Sullivan (2007) investigated the impact that new casinos entering the St. Louis area casino market potentially have on the EGD win percentage at existing casinos. Their estimates suggest that the opening of additional casinos within 50 miles of another casino decreases the win percentage at existing casinos by 0.4 percent to 1 percent for each new casino opening within that distance.

The recent displacement of business at Blue Chip Casino by nearby Four Winds Casino serves to demonstrate the attendance and win losses that could occur in other Indiana casino markets if Kentucky or Ohio legalizes casino gaming and makes a concerted effort to establish casinos in areas bordering Indiana. Four Winds is a tribal casino operated by the Pokagon Band of Potawatomi Indians in New Buffalo, Michigan. The location is 10 to 15 miles from Blue Chip Casino in Michigan City, well within the spatial market to the north and east that Blue Chip monopolized since it opened in August 1997. **Figure 4** shows the 25-mile, 50-mile, and 100-mile areas around Blue Chip Casino.

Blue Chip's market area has always been somewhat truncated to the west due to the casinos in Lake County and Illinois. However, prior to the opening of Four Winds, Blue Chip's market to the east and northeast was basically unimpeded. Making the simplifying assumption that a gambler won't pass one casino to visit another casino that is further away, Four Winds physically reduces Blue Chip's market area, to the east and especially to the northeast. What's more, in comparison to Blue Chip, Four Winds pays a much lower excise tax on its gaming receipts. During 2008, the combined admissions and wagering tax rate on Blue Chip casino was 31.3 percent of the casino win. In contrast, Four Winds pays a total of 8 percent of its win on EGDs only to state and local government in Michigan. Thus, not only can Four Winds compete with Blue Chip by its proximity to gamblers in that general market, it potentially can undercut Blue Chip (vis-à-vis marketing, pay-out rates, or comps) solely on the basis of the tax differential.

Figure 4: Blue Chip Casino Market



Source: Indiana Legislative Services Agency

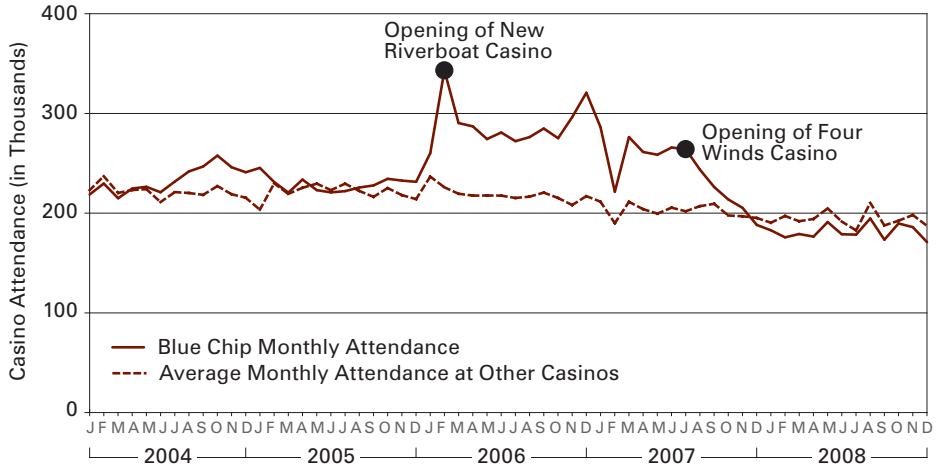
Figure 5 and **Figure 6** compare the monthly attendance and win at Blue Chip Casino to the average monthly attendance and win at all other casinos in Indiana.[22] The attendance and win series are de-seasonalized using a twelve-month moving average in order to smooth month-to-month volatility. Each series for all other Indiana casinos is relatively smooth and stable. The average monthly attendance declined slowly from about 225,000 to about 200,000 from the beginning to the end of the series. Meanwhile, the average monthly win was roughly $20 million per month over most of the series, but fell below the $20 million mark in 2008.

In comparison, the monthly attendance and win at Blue Chip jumped in February 2006 from averages of roughly 232,000 and $19.5 million, respectively, to averages of about 280,000 and $24 million, respectively.[23] The opening of a new and larger riverboat casino by Blue Chip led to these marked increases. However, after Four Winds Casino opened in August 2007, average monthly attendance and win fell to levels well below those attained at Blue Chip when it operated its old riverboat casino. From August 2007 to December 2008, Blue Chip averaged only about 188,000 patrons and about $15.7 million in win per month. Comparing the August 2007 to July 2008 period to the prior twelve-month period, attendance at Blue Chip has declined by about 26 percent and the win generated by the casino has declined by about 27 percent. In 2008, these declines in business led to losses of about $2.5 million (a 26 percent reduction) in admission tax payments and about $27 million (a 32 percent reduction) in wagering tax payments from Blue Chip Casino. This entire revenue loss

accrued to the state and its property tax relief program.

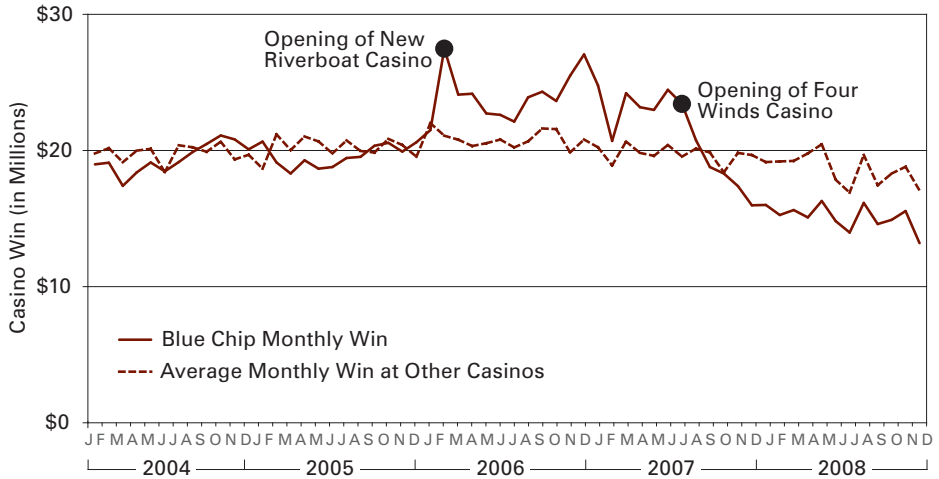
While the competition from Four Winds has led to marked reductions in the attendance and win generated by Blue Chip, it appears that it has also pushed the win percentage on EGDs down slightly as predicted by Navin and Sullivan (2007). On average, the win percentage on EGDs reported monthly for Blue Chip Casino has been slightly lower since Four Winds Casino opened compared to prior years. The mean difference in the win percentage before and after Four Winds opened is statistically significant, ranging from about 0.14 percent to 0.21 percent depending on the time frame of the comparison.[24] This magnitude fails to approach the win percentage reductions cited by Navin and Sullivan, but could have reduced the wagering tax payments from Blue Chip by roughly $1.5 million to $2.5 million. This is based on the total amount wagered on EGDs at Blue Chip in 2007 before Four Winds opened.[25] Consequently, the small, albeit statistically significant, decline in Blue Chip's win percentage indicates that almost all of the reductions in win and wagering tax from Blue Chip is due to patrons shifting their business to Four Winds Casino and not from any "price" competing behavior by Blue Chip.

FIGURE 5: Blue Chip Casino and Other Casinos' Monthly Attendance, 2004 to 2008



Source: Indiana Gaming Commission

FIGURE 6: Blue Chip Casino and Other Casinos' Monthly Wins, 2004 to 2008



Source: Indiana Gaming Commission

Conclusion

The history of casino gambling in Indiana to this point has been dominated by two contrasting growth periods. The first, stretching from 1996 until roughly 2001 or 2002, witnessed the opening of ten riverboat casinos with over 16,000 EGDs and almost 700 table games. Average annual growth in casino attendance equaled about 15.4 percent and the average annual growth in casino win equaled about 21.2 percent. However remarkable these early growth rates were, the speed at which the trend in casino attendance and casino win has since flattened out is just as remarkable. Since 2003, attendance has grown by an average of only 1.6 percent per year, with the win growing by an average of only 3.4 percent.

The recent trends in casino attendance and win suggest that, at best, long-run annual growth in the wagering tax may persist, but at rather nominal rates. Research estimating the relationship between personal income and casino win confirms this conclusion. The research also indicates that in mature casino markets, like those in Indiana, casino win may grow at a rate that is only one-half to three-quarters the annual rate of growth in personal income. What's more, this research suggests that cyclical economic downturns could have significant negative short-run effects on wagering tax revenue. Short-run declines in income during recessionary periods could lead to declines in casino win at almost twice the rate of decline in income. Finally, future growth in wagering tax revenue could be significantly impaired if casino gaming is legalized in Ohio or Kentucky and competing casinos are located in the Cincinnati or Louisville areas, or in

Kentucky near Evansville. The level of displacement that might occur with competition from either Ohio or Kentucky is not estimable. However, the displacement occurring at Blue Chip Casino in Michigan City due to competition from a nearby casino in Michigan is indicative of how critical this issue could become.

Notes

1. References the state fiscal year, which begins on July 1st and ends on June 30th of the year denoted.
2. Recall that the wagering tax series contains coincident structural breaks in 2002. At that time, dockside gaming began, but the wagering tax was increased by about 40 percent when the rate structure was changed from a flat rate of 20 percent to a graduated rate structure ranging from 15 percent to 35 percent.
3. Twenty-four-hour gaming operations at the casinos were allowed for the first time in 2004; however, there was no statistically discernible impact of this change on attendance or win.
4. See Nichols (1998), Rivenbark (1998), Layton and Worthington (1999), Potiowsky and Parker (2000), Thalheimer and Ali (2003, 2008), Nicols and Tosun (2008), and Landers (2008a, 2008b).
5. Annual aggregate and per capita personal income measures utilized in this article are estimates (updated September 18, 2008) published by the Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce.
6. The arc elasticity is equal to 2.4.
7. The arc elasticity is equal to 0.7.
8. U.S. GDP declined in the third quarter of 2000 and the first and third quarters of 2001 according to the National Income and Product Accounts, Real Gross Domestic Product, Chained Dollars, U.S. Bureau of Economic Analysis.
9. Quarterly real personal income in Indiana in millions of chained 2000 dollars, Federal Reserve Bank of St. Louis, third quarter 2007 to second quarter 2008, release date 12/18/08, http://research.stlouisfed.org/fred2/personalincome.
10. Based on interviews of randomly selected patrons (n=785) visiting five Illinois riverboat casinos during July–August 1995.
11. Based on surveys of randomly selected patrons (n = 13,000) visiting ten Illinois riverboat casinos over four days in June 1997.
12. Based on ZIP code data for players supplied by Indiana casinos.
13. The two new racetrack casinos in Anderson and Shelbyville likely serve a proportionately smaller non-resident customer base due to their interior locations.
14. Based on ZIP code level patron data supplied by riverboat casinos located in Northwest Indiana and the Ohio River. Data report casino attendance and casino win by ZIP code.
15. Blue Chip's win in 2008 was $77.5 million below its 2007 win. Based on a 35 percent marginal wagering tax rate, the loss in win led to a loss of about $27 million in wagering tax revenue.
16. James Nash, "Gambling company now pushing own casino proposal: Penn National, which fought rival's 2008 ballot issue, looks to November election," Columbus Dispatch, January 9, 2009, www.dispatch.com/live/content/local_news/stories/2009/01/09/casino.html.
17. Pac Contributions—No on 6 Committee (Con Issue 6), Campaign Finance Filings Database, Campaign Finance Unit, Ohio Secretary of State, www.sos.state.oh.us/SOS/Campaign%20Finance/disclosure.aspx.
18. Video lottery terminals are operated at racetracks in Delaware, Rhode Island, and West Virginia, and at social and fraternal clubs in West Virginia, with the state lottery agencies in these states administering and regulating their use.
19. Gregory A. Hall, "Stumbo files gambling bill," *Louisville Courier-Journal*, January 9, 2009.
20. The win percentage on EGDs can be readily altered by casino owners while the win percentage for table games reflects traditional payout rates.
21. The win percentage is the average percentage of the gross wagers on EGDs retained by the casino. It represents the price to the gambler for playing the EGDs. The payout rate is equal to one minus the win percentage, thus, increasing the pay-out rate decreases the price to the gambler. However, the base for wagering tax is the win. So price competition is expected to reduce the win and, as a result, reduce the wagering tax yield.
22. The June–December 2008 win totals for other casinos include the monthly win totals from the Hoosier Park and Indiana Downs racetrack casinos.
23. Severe weather affected attendance and win in February 2006.
24. Based on separate t-tests: (1) An independent samples t-test comparing the January 2004–July 2007 average monthly win percentage to the August 2007–December 2008 monthly average; and (2) a paired samples t-test comparing the August 2006–July 2007 average monthly win percentage to the August 2007–July 2008 monthly average. Both tests were significant at less than the 1 percent level.
25. The "coin-in" or total wagers on EGDs at Blue Chip during 2007 totaled $3,216.3 million. The win percentage reductions led to a reduction in the win of about $4.5 million to $6.8 million based on the coin-in total. Based on a 35 percent marginal wagering tax rate, the revenue loss would range from about $1.6 million to $2.4 million.

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