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## Gaming, States and Tax Revenues - The Tortoise or the Hare: A CGE Comparative Assessment of Casino Resorts and Racinos

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## **Gaming, States and Tax Revenues—The Tortoise or the Hare:**

### **A CGE Comparative Assessment of Casino Resorts and Racinos**

**ABSTRACT.** State tax revenues from casinos as a share of total state gaming revenues generally correlate well with the year of legalization. Theoretically speaking, heavy tax rates should dampen growth of the casino revenues in states that adopt them. Indeed, states with lower tax rates tend to have larger gaming revenue streams. Since they enable more investment, lower tax rates should enable more jobs and income to be generated directly by the gaming industry. Using a detailed self-made computable general equilibrium model for the 2010 economy, we evaluate the effects of a racino in New Jersey that is taxed at a rate similar to casinos in Pennsylvania. It is assumed a consumer capture rate for the casino that is similar to that in Pennsylvania. We find that the state definitely gains from the entry of such a racino.

Keywords: Gambling, regional economies, computable general equilibrium models.

JEL classification: L83, R13, C68.

#### **1. Introduction**

Legal casino gaming during the past four decades has been viewed through a political lens that has enabled society to see the industry as a means of achieving a “higher purpose.” Thus, in some states tax revenues generated by gambling are earmarked for specialized public services for senior or non-ambulatory citizens or the reallocation of wealth to underprivileged groups. Such purposes can be fulfilled when a state captures some of the large economic benefits that can arise from legalizing a previously prohibited economic activity like casino gaming. More generally, the legalization of gaming has been made possible through the promise of economic development benefits from the existence of casinos, such as job creation, investment stimulation, tourism development, and urban revitalization. Indeed, one or both of these factors explain why Monaco, Macao, Nevada, the Caribbean, and Atlantic City opted to pursue casino gaming. The economic development aspect was undoubtedly key to the more recent expansion of legalized gaming in the U.S. into such municipalities as East St. Louis, Illinois; Gary, Indiana; Tunica,

Mississippi; New Orleans and Shreveport, Louisiana; Chester, Pennsylvania; and Detroit, Michigan.

Because it must be sanctioned by state government, the commercial casino industry is one of the most transparent, regulated, monitored, and taxed industries in the United States. Moreover, most commercial casino companies and gaming equipment manufacturers are publicly held companies whose equities are traded on stock exchanges. It is state governments that play the main role in regulating the industry. In turn, the regulating states receive a substantial portion of net casino receipts in the form of tax revenues. Statutory casino-gaming revenue tax rates vary by state, ranging from as low as 6.75 percent of gaming revenues in Nevada to 55 percent in Pennsylvania.

**Table 1: Casino Revenue, Payroll, and Taxes for Major Gaming States, 2011**

	Date of First Casino	Gaming Revenue (\$ Billion) (1)	Payroll (\$ Billion) (2)	Ratio (2)/(1) (3)	State Tax Revenue (\$ Million) (4)	Ratio (4)/(1) (5)	Jobs (6)
Nevada	1931	10.40	7.82	0.752	835.4	0.080	175,024
New Jersey	1978	3.57	1.03	0.289	305.5	0.086	34,145
South Dakota	1989	0.11	0.04	0.374	17.2	0.162	1,512
Colorado	1991	0.76	0.26	0.340	107.0	0.141	9,589
Illinois	1991	1.37	0.30	0.216	466.1	0.340	6,892
Iowa	1991	1.37	0.33	0.240	305.4	0.223	8,915
Mississippi	1992	2.39	0.83	0.346	285.5	0.119	24,707
Louisiana	1993	2.37	0.58	0.246	572.0	0.241	16,873
Missouri	1994	1.79	0.34	0.191	486.1	0.272	11,071
West Virginia	1994	0.88	0.12	0.138	378.5	0.431	4,528
Delaware	1995	0.57	0.10	0.184	243.1	0.425	3,245
Indiana	1995	2.79	0.49	0.177	874.9	0.314	14,144
Michigan	1999	1.38	0.42	0.303	311.4	0.226	8,067
New Mexico	1999	0.25	0.03	0.130	64.3	0.260	3,465
New York	2004	1.09	0.10	0.088	503.5	0.462	1,423
Maine	2005	0.06	0.01	0.171	30.2	0.501	385
Oklahoma	2005	0.10	0.02	0.219	16.6	0.166	770
Florida	2006	0.33	0.07	0.204	140.8	0.428	2,533
Pennsylvania	2007	2.49	0.39	0.156	1,328.0	0.533	12,664
Kansas	2009	0.04	0.01	0.228	9.5	0.251	303

Maryland	2010	0.03	0.00	0.123	15.9	0.575	309
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Source: American Gaming Association. *State of the States 2011: The AGA Survey of Casino Entertainment*.

<http://www.americangaming.org/files/aga/uploads/docs/sos/aga-sos-2011.pdf>.

†Data for Rhode Island were omitted due to reporting issues.

As can be seen from Table 1, state tax revenues from casinos as a share of total state gaming revenues generally correlate fairly well with the year of legalization. The share ranges from about 8.0 percent in Nevada, the first state to legalize gambling, to 53.3 percent in Pennsylvania. It is also fairly clear from Table 1 that as effective gaming privilege taxes raise across states that gaming-related employment tends to fall. Essentially, by garnering tax revenues from casinos, governments disable casinos from investing internally, moneys that would otherwise enable them to expand and employ more workers. But governments apply the revenues they collect to the benefit of their broader society.

Tax rates do not simply establish government claims on gambling revenue. They also largely determine the kind of gambling that will be taxed (Christiannsen, 2005). Casino resort properties relate to communities differently than do racinos; racinos in turn have different effects upon communities than do video poker machines in neighborhood businesses. Each in turn can be taxed at higher rates. Thus, when lawmakers set high gambling privilege tax rates, they effectively decide against diversified casino resort properties and in favor of machines-only facilities that offer gaming and nothing else. Thus high gambling privilege tax rates can maximize government revenues but militate against the establishment of capital-intensive, labor-intensive facilities.

Naturally a question asked by policymakers is “what is better for a state’s economy, a casino gaming industry centered on diversified casino resorts with modest revenue taxation or one relying on slot machines with a high tax rate?” The set of academic literature that can be applied to help answer this question is rather thin. Indeed, published economic studies mostly

focus on evaluating the effects of casinos and other gaming industries on state tax revenues using standard econometrics approaches (Anderson, 2005; Calcagno, Walker, and Jackson, 2010; Walker and Jackson, 1998, 2007, 2011). Walker and Jackson (1998, 2007) found that while lotteries and horse racing yielded positive benefits to state tax coffers, greyhound racing and casino gambling did not. In fact, in the 1985-2000 period of their study, a period during which many states started legalizing the industry, casino revenues seemed to yield a net negative effect on state tax revenues. But they acknowledge that exceptions to their findings surely exist since Nevada has clearly benefitted heavily from the location of casinos in Las Vegas. Moreover, Calcagno, Walker, and Jackson (2010) suggest that casino gaming may be a viable counter-tactic in interstate competition for gamblers' cash. That is, since the advent of casino in Mississippi, states have been more interested in keeping resident gamblers in state as a means to re-secure lost consumer dollars and concordant taxes.

Of course, there also has been a myriad of studies that investigate the economic contribution of casino gambling to local economies, although few have been published. In a meta-analysis of them, Rose (2001) discovers that economic benefits tend to attenuate to host economies of gaming casino. Although such input-output analysis-based studies are important to the scant body of gaming economic literature, none of them captures the general equilibrium price effects these industries are likely to yield. These price effects, which can be obtained via a computable general equilibrium (CGE) model, are a key contribution of the present piece.

Indeed, the impact of increasing state government tax revenues through a new set of slot-machines at racetracks can be evaluated with a CGE model. In this paper, we analyze the impact of a potential new slot machine resort in northern New Jersey using such a model. We analyze the impact on the existing the state's casino resort industry as well as on the state's fiscal well-

being, employment levels, and gross domestic product. The model is calibrated with a social accounting matrix for New Jersey in 2010 (SAMNJ-10) elaborated by the authors.

Topically this paper is designed to investigate the implications to a state economy of a new slots-only gaming facility in a state that has a strong base of casino resorts—the situation in New Jersey. The new gaming venue is predicated on the Pennsylvania model of high taxation, while the rest of the state’s casinos are taxed at nominal levels. In fact, we assume the new facility has revenues of \$500 million, which is based on the approximate size of similarly poised establishments in Pennsylvania.

The rest of the paper is organized as follows. Section 2 depicts the main characteristics of the CGE model and Section 3 presents the main features of the database, the SAMNJ-10. In Section 4, the shocks simulated are explained and discussed. Finally, Section 5 concludes.

## **2. The computable general equilibrium model**

CGE models obtain solutions to a set of nonlinear macroeconomic equations based on the optimization behavior of pertinent economic agents. In the case of the present model, the SAMNJ-10 data define the equations. In the last ten years or so, the use of regional and multiregional CGE models to evaluate the economic impact of very different topics has been continuously growing (McGregor *et al.*, 2010). In the case of the U.S., many studies follow the tendency of using prepackaged software of CGE models and databases (c.f., Seung and Waters, 2010; Giesecke, 2011; Monge and Bryant, 2012). However, such models are best exploited when they are designed and used by authors who are best positioned to comprehend limitations of the data and modeling assumptions.

The model used in the course of the research presented here contains 57 productive industries that minimize their costs subject to total production, which is a CES combination of

domestic production, international imports and inflows. This production is demanded by households and non-residents consumers. The representative household maximizes its utility through a combination of consumption and savings and its income stems from capital and labor while the Government revenues come basically from taxes and transfers paid by other agents. The corporate sector is an intermediate agent that receives income from capital and pay taxes and current transfers. Finally, the foreign sector is divided in two: the rest of the US (RUS) and the rest of the world (ROW).

### *Firms*

The total production  $Y_i$  is a nested constant return to scale production technology. At the first level, total production is a CES aggregate of regional production  $Y_{ri}$  and inflows from the RUS  $Y_{rui}$  and the ROW  $Y_{rowi}$ .

$$Y_i = \phi_i \left( \delta_{ri} Y_{ri}^{\rho_i} + \delta_{rui} Y_{rui}^{\rho_i} + \delta_{rowi} Y_{rowi}^{\rho_i} \right)^{1/\rho_i} \quad \delta_{ri} + \delta_{rui} + \delta_{rowi} = 1$$

where  $\delta_{ri}$ ,  $\delta_{rui}$ , and  $\delta_{rowi}$  are the regional and foreign distributive parameters and  $\rho_i$  is a parameter that determines the degree of substitution between regional production, inflows and international imports (Armington, 1969).

In the second level, regional production  $Y_{ri}$  is a Leontief combination of intermediate inputs and value added.

$$Y_{ri} = \min \left( \frac{X_{1i}}{a_{1i}}, \frac{X_{2i}}{a_{2i}}, \dots, \frac{V_i}{v_i} \right) \quad i = 1, \dots, 57$$

where  $X_{ji}$  and  $V_i$  are the quantities of input  $j$  and value added used to produce the regional commodity  $i$ .  $a_{ji}$  and  $v_{ji}$  are the corresponding technical coefficients and unitary requirements of value added. Finally, value added is a Cobb-Douglas function of labor  $L_i$  and capital  $K_i$ .

$$V_i = \gamma_i L_i^{\beta_{li}} K_i^{1-\beta_{li}} \quad i = 1, \dots, 57$$

where  $\gamma_i$ ,  $\beta_{li}$  and  $(1-\beta_{li})$  are, respectively, the scale parameter and factor distribution parameters.

Firms minimize their costs subject to the value added constraint in the last level in the nesting and derive labor and capital demand. The price of value added is a function of labor and capital prices, labor and capital demand and value added.

In the upper nest of the CES production function, firms minimize the cost of total production including in final production prices the tax rate on sales, which is positive in the retail and wholesale sectors and zero elsewhere.

In this paper, import prices are fixed and equal to one (small country assumption) and exports are value with total production prices. It is assumed that changes in NJ prices do not affect foreign prices. Finally, the consumer price index,  $P_c$ , is a weighted average of consumer

$$\text{prices: } P_c = \sum_{i=1}^{57} p_i \pi_i$$

### *The Corporate Sector*

As mentioned before, the corporate sector is an intermediate agent in the model that receives revenues from capital services and pay taxes and transfers. The gross income of corporate sector

$GI_{cs}$  can be defined as:

$$GI_{cs} = r \cdot K_{cs}$$

Net disposable income of corporate sector  $NDI_{cs}$  is obtained from  $GI_{cs}$  less income tax:

$$NDI_{cs} = (1 - \tau^{cs}) GI_{cs}$$



Finally, the corporate sector savings are obtained as net disposable income less the proportion of dividends  $\overline{Q}_h$  over capital revenues paid to households and the current transfers paid to households  $\overline{CRP}_h$  and NPISH  $\overline{CRP}_n$

$$S_{cs} = NDI_{cs} - \theta_h r K_{cs} - p_c \overline{CRP}_h^{cor} + \overline{TRP}_{SLG}^{cor}$$

### *The Representative Household*

The representative household maximizes the utility through a Cobb-Douglas combination of consumption and savings

$$U(C, S) = \prod_{i=1}^n C_i^{\alpha_i} S_h^{1 - \sum_{i=1}^n \alpha_i}$$

where  $C_i$  is the consumption of commodity/service  $i$  and  $S_h$  is savings.  $\alpha$ 's are the share parameters of consumption and household' gross income comes from the sale of labor services in New Jersey,  $\overline{C}^{nj}$  and in other states  $\overline{C}^{ru}$ ; the sale of capital services in,  $\overline{K}_h$ ; unemployment benefits; the share in the revenues of social security contributions of employers; transfers from the corporate sector; other current transfers from State and Federal Government; and dividends.

$$GI_h = w(-u \overline{L}^{nj} + \overline{w}^{ru} L^{ru} + rK_h + PSCE_h \cdot SCE) + p_c \overline{CRP}_h^{cor} + \overline{TRP}_h^{FG} + \overline{TRP}_h^{SLG} + \mu \cdot w \cdot u \cdot L + \theta_h r K_{cs}$$

where  $u$  is the unemployment rate;  $PSCE_h$  is the share of households in social contributions of employers revenues, which is  $SCE$ ;  $\overline{TRP}_h^{cor}$  current transfers paid by corporations;  $\overline{TRP}_h^{FG}$  current transfers paid by the federal government and  $\overline{TRP}_h^{SLG}$  current transfers paid by the state and local government. Finally,  $\mu$  is the proportion of the wage rate paid to the unemployed.

Net Disposable income,  $NDI_h$ , equals  $GI_h$  minus personal income tax, and Consumption and savings demands are the solution to the maximization problem of households:

$$U(C, S) = \prod_{i=1}^n C_i^{\alpha_i} S_h^{1-\sum_{i=1}^n \alpha_i} \quad s.t. \quad NDI_h = \sum_{i=1}^n p_i C_i + p_s S_h$$

Where  $p_s$  is a price index of private investment. Consumption and savings are

$$C_i = \alpha_i \frac{NDI_h}{P_i} \quad S_h = \left(1 - \sum_{i=1}^n \alpha_i\right) \frac{NDI_h}{P_s}$$

### *State and Local Government*

The State and Local government<sup>1</sup> collects a proportion of direct taxes on income, taxes on sales, taxes on gaming and other taxes on production. It also receives transfers from corporations and the federal government. Public revenues can be defined as

$$GI_{SLG} = r \cdot K_{SLG} + PDTX_{SLG} \left( GI_h \cdot \tau^{it} + GI_{cs} \cdot \tau^{cs} \right) + \tau_i^{sl} P_i Y_i + \tau_i^{GM} P_i Y_i + PTP_{SLG} \cdot \left( P_i P_{ri} Y_{ri} \right) + p_c \left( TRP_{SLG}^{FG} + TRP_{SLG}^{cor} \right)$$

Where  $TRP_{SLG}^{cor}$  is current transfers paid by corporation.  $TRP_{SLG}^{cor}$  is the current transfers paid by the Federal Government;  $PDTX_{SLG}$  and  $PTP_{SLG}$  are the share coefficients of state and local government on direct tax and other taxes on production revenues, respectively.

These revenues are used to pay unemployment benefits and other transfers and subsidies. State and Local Government consumption and investment are constant in the model but because prices and revenues are endogenous also public deficit is endogenous.

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<sup>1</sup> In this definition of government NPISH are included

### *Federal Government*

The Federal Government collects taxes on labor (social security contributions of employees and employers) and taxes on imports in addition to taxes on production and income tax. These revenues are used to pay current transfers to households and the State and Local Government. In this case, also federal public investment and consumption are exogenous and federal public surplus is endogenous.

### *Foreign Sectors*

In the two foreign sectors of the model, the rest of the US and the rest of the world, revenues stem from endogenous inflows and imports respectively while outflows and exports are exogenously determined. The foreign current balances are endogenous and match the difference between imports/exports and inflows plus adjustment of residence/outflows.

### *Investment and Calibration*

The closure rule in a CGE model determines the endogenous variables in the market clearance conditions. There are several closure rules and they may have significant effects on the results. In this paper we use the Keynesian closure rule whereby private investment is exogenous and domestic and foreign savings are the adjusting variables (investment driven). Additionally, wages are institutionally fixed and employment is the adjusting variable in the labor market. This closure rule seems to be the most appropriate to evaluate the impact of external shocks as an increase in nonresident consumption (Álvarez-Martínez and Polo, 2012). In other case, the increase of foreign demand will reduce foreign savings and produce a fictitious negative impact on private investment.

The parameters and exogenous variables of the model are numerically defined in the calibration. This model has been calibrated with the SAM of New Jersey described in the

following section of the paper. Prices are equal to one in the base year and figures in the SAM are equal to quantities. The elasticities of substitution between imports, inflows, and regional commodities have been derived from GTAP, Hertel *et al.* (2008). The equilibrium is a set of prices and quantities whereby total supply equals total demand in all commodity markets; labor supply equals effective labor demand and capital services supply equals demand; Private investment is equal to domestic and foreign savings and public deficit is equal to public revenues less expenditures. The foreign savings also satisfy the restrictions of the external sectors.

### **3. The SAMNJ-10**

A Social Accounting Matrix (SAM) is a balanced matrix that captures the circular flow of income within an economy for a specific period of time. SAMs complete the information provided by Input-Output tables with data included in national accounts and show the interaction among production, generation of income and use of income.

The SAM for New Jersey in 2010 (SAMNJ-10) has been elaborated using the latest benchmark input-output tables for the US (from 2002) and data from the US Bureau of Economic Analysis (BEA), the *Quarterly Census of Employment and Wages* (QCEW), the *Internal Revenue Service Data Book, 2010*, and *State and Local Government Finances: 2010* for New Jersey. The SAMNJ-10 is a 439-by-439 balanced matrix based on producers' prices. It contains one representative household, one nonresident consumer from the RUS, a corporate sector, two sectors of government (federal and a combined state and local, which includes Non-Profit Institutions Serving Households (NPISH)), and two foreign sectors, RUS and ROW. There are two accounts for transfers (unemployment benefits and dividends), six accounts for tax revenues (direct taxes, Social Security Contributions of employers, Social Security Contributions of employees, taxes on production, taxes on sales, and taxes on imports), one account for

subsidies on production, three investment accounts (federal government, state and local government, and private investment), changes in the industry stocks, savings, two productive factors (labor and capital), and 416 productive sectors or activities that have been aggregated to 57 in this paper (see Appendix, Table A1). The structure of the matrix is detailed in Figure 1. An initial version of the 2010 input-output matrix for New Jersey was estimated following Lahr (2001) but the great lack of regional data poses added problems to the construction process that any SAM entails<sup>2</sup>.

**Figure 1. Main Accounts of the SAMNJ-10**

	<b>Institutions (5)</b>	<b>Transfers (2)</b>	<b>Taxes and Subsidies (7)</b>	<b>Gross Capital Formation (4)</b>	<b>Savings (1)</b>	<b>Primary Factors (2)</b>	<b>Productivity Sectors (416)</b>	<b>Foreign Sector (2)</b>
<b>Institutions</b>	Transfers among institutions	Redistribution unemployment benefits and dividends	Redistribution of tax revenues among the institutional sectors			Labor and capital income		
<b>Transfers</b>	Unemployment benefits and dividends payments							
<b>Taxes and subsidies</b>	Income taxes and subsidies payments						Contributions, taxes on production, sale taxes and tariffs	
<b>Gross Capital Formation</b>					Redistribution of savings			
<b>Savings</b>	Public and private savings							Foreign savings

<sup>2</sup> Detailed information about the SAMNJ-10 is available upon request from the authors

<b>Primary factors</b>							Labor and capital income	Adjustments for residence
<b>Productive sectors</b>	Public and private consumption		Subsidies on production	Investment and Stocks variation			Intermediate matrix	Exports
<b>Foreign sector</b>							Imports	

#### 4. Simulations and Results

The simulations implemented in this paper are motivated by the prospect of creating a new gaming industry in northern New Jersey (in the Meadowlands, in fact) that relies on slot machines and, hence, taxed a high tax rate. We decided it would net increase revenues in the Entertainment industry by \$500 million, and it would do so largely by increasing non-resident consumption from Pennsylvania and New York. The revenue figure is the reported revenue stream of similar casinos in Pennsylvania (Pennsylvania Gaming Control Board, 2013) such as the Sands Casino Resort in Bethlehem (table games of \$116.9 million and slot machines of \$286.1 million) or Parx Casino in Bensalem Township (\$95.8 million and \$387.9 million, respectively, for table games and slot machines).

To evaluate the likely positive or negative macroeconomic effects on New Jersey of a new gaming establishment, three different shocks are simulated. In the first simulation, *SimA*, we analyze the impact of an increase in nonresident consumption of \$500 million in the entertainment sector, which represents 33.1 % of nonresident consumption of Entertainment, taxed at 47.5 percent, which implies an increase in the gaming tax rate of the whole sector of 8.68 percentage points (pp). (Note this tax rate is purposely similar to that one applied to casinos

in Pennsylvania.) The second simulation, *SimB*, quantifies the impact of *SimA* plus the reduction of 12.6 percent of nonresident consumption in Casino Resorts as a consequence of the new gaming industry. This decline results in reducing nonresident consumption of Resort Casinos in the SAMNJ-10 by \$250 million dollars, which is 50 percent of the output generated by the new slots-only racino. Although this figure may be high if the attending public of casinos and racinos is different, it is certainly an interesting and worthwhile simulation to the state to evaluate the worst-case scenario when considering whether to permit the existence of such a racino. Finally, *SimC* includes the shocks in *SimB* and the reduction of nonresident consumption in other sectors (tourism spending) associated with casinos visitors in Atlantic City. The shares of average tourism spending by general expenditure category have been obtained from Lahr *et al.* (2010). We thereby assume that \$250 million gaming expenditure reduction in casino resorts represents 60 percent all visitors' spending in the state. The other 40 percent is tourism spending which is distributed among the different spending categories displayed in Table 2.

<b>Table 2. Variation in nonresident consumption, <i>SimC</i></b>				
Commodities/Services		Shares of average tourism spending		Change in services use in SimC
<b>Lahr et al. (2010)</b>	<b>SAMNJ-10</b>	<b>%</b>	<b>Millions</b>	<b>%</b>
Food and beverage	(I47) Food and drinking places	9	\$37.2	-1.33
Shopping	(I29) Wholesale trade and (I30) Retail trade	8	\$33.3	-6.47
Entertainment	(I42) Performing arts, etc.	11	\$45.8	-2.72
Lodging	(I38) Real state and leasing	10	\$41.7	-1.4
Travel	(I31) Air transportation and (I35) Other transportation	2	\$8.3	-1.8
Gaming	(I43) Gaming	60	\$250.0	-12.6
Source: Lahr <i>et al.</i> (2010) and own elaboration.				

*4.1 Simulation SimA.* The results of this first simulation on public revenues and expenditures are presented in Table 3. Table 4 displays the impact on the main macroeconomic variables. The

increase of nonresident consumption on entertainment has significant positive effects on public deficit due to the increase of taxes on gaming. The nominal wage is the *numeraire*, so the price of capital services goes up to balance the capital market. As a consequence, domestic and consumer prices rise. Current transfers and public consumption, valued with the consumer price index, increase but the positive effects on employment reduce expenditures on unemployment transfers. These effects combined with the increase of tax revenues on gaming cut public deficit down in 1.92 percent.

Table 3. Variation in Public Accounts (percentage)				
	BENCHMARK	S1	S2	S3
<b>TOTAL REVENUES</b>	<b>74,230.508</b>	<b>0.45</b>	<b>0.37</b>	<b>0.32</b>
Taxes on production	29,289.718	0.12	0.08	0.02
Taxes on gaming	339.323	73.73	67.77	67.74
Taxes on sales	11,439.799	0.07	0.03	-0.03
Income taxes	12,370.417	0.09	0.04	0.00
capital revenues	16,385.840	0.13	0.05	0.00
Intergovernmental transfers	3,954.785	0.05	0.04	0.02
Corporate transfers	450.626	0.05	0.04	0.02
<b>CURRENT EXPENDITURE</b>	<b>82,233.011</b>	<b>0.15</b>	<b>0.05</b>	<b>0.00</b>
Subsidies to production	1,785.000	0.09	0.05	0.00
Unemployment benefits	7,625.010	-0.94	-0.26	0.00
Transfers paid to households	1,137.410	0.05	0.04	0.02
Consumption	71,685.591	0.03	0.01	0.00
<b>INVESTMENT</b>	<b>8,450.795</b>	<b>0.02</b>	<b>0.01</b>	<b>0.00</b>
<b>PUBLIC SURPLUS</b>	<b>-16,453.298</b>	<b>-1.92</b>	<b>-1.43</b>	<b>-1.20</b>
S1: Increase of taxes on gaming (entertainment) in 8.68 pp and nonresident consumption in entertainment (33.1 percent)				
S2: S1+ reduction in nonresident consumption in casinos (12.6 percent)				
S3:S2+variation in nonresident consumption				

As can be observed in Table 4, the increase of nonresident consumption barely changes real GDP due to the general equilibrium effects but reduces unemployment by 0.09 pp and raises



the state's job count by 4,960. This number is estimated by multiplying the figure of employees in New Jersey in 2010, 4,964,752 according to U.S. Bureau of Economic Analysis, by the percentage rise of employment, which results from the model. Households' disposable income goes up as result of the improved employment situation, as do private consumption and savings. In the simulation, the increase in nonresident consumption reduces foreign savings but a rise in imports and export prices make the current balance of payments more favorable with the rest of the US (it rises 0.49 percent). The current balance with the ROW increases in 0.08 percent. From

<b>Table 4. Variation of macroeconomic variables (percentage)</b>				
	BENCHMARK	<i>SimA</i>	<i>SimB</i>	<i>SimC</i>
Nominal GDP	480,510.650	0.16	0.09	0.05
Real GDP	480,510.650	0.06	0.02	0.00
Unemployment rate	<b>9.600</b>	<b>9.51</b>	<b>9.57</b>	<b>9.60</b>
Employment	-	0.10	0.03	0.00
Household disposable income	364,570.375	0.07	0.03	0.00
Consumption	321,401.413	0.07	0.03	0.00
Savings	43,168.962	0.07	0.03	0.00
BP RUS	-113,877.890	0.49	0.31	0.21
BP ROW	76,498.855	0.08	0.04	0.02
Jobs created	-	<b>4,960</b>	<b>1,392</b>	<b>13</b>
S1: Increase of taxes on gaming (entertainment) in 8.68 pp and nonresident consumption in entertainment (33.1 percent)				
S2: S1+ reduction in nonresident consumption in casinos (12.6 percent)				
S3: S2+variation in nonresident consumption				

this, it can be concluded that the positive effects of raising final demand outweigh the negative effects of the enhanced tax burden on the Entertainment industry.

*4.2 Simulation SimB.* The positive results from *SimA* are more than halved when some potential deleterious shocks are simultaneously effected on the Casino Resort industry (I46). In this simulation *SimB*, it is assumed that the new slot machine establishment partially substitutes for the Casino Resort industry, reducing nonresident consumption at Casino Resorts by \$250 million

or 12.6 percent of their 2010 revenue base. The increased tax rate on Entertainment sector still raises gaming tax revenues significantly, but the loss of nonresident demand at the Casino Resorts lowers those tax revenues somewhat from those obtained via *SimA*. The price of capital services also increases to equilibrate the capital market. Consumer prices and the CPI also rise concordantly. Interestingly, unemployment benefits fall only by 0.26 percent. However, it is the slight increase in prices that raises current private spending by 0.05 percent and private investment levels by 0.01 percent, both of which lead to a decline in public deficit of 1.43 percent. The effects on real GDP are almost negligible, the unemployment rate goes down by less than 0.03 pp and the number of jobs created drops from the 4,960 in *SimA* to 1,392.

*4.3 Simulation SimC.* The final simulation, *SimC*, represents a complete scenario, and in that vein it is the most realistic of the three. In addition to the drop of nonresident consumption at Casino Resorts, we include a decline in associated final demand of food and beverage, shopping, entertainment, lodging and travel from visitors who stay overnight. Although this is deemed to be a worst-case scenario, results in the last column of Table 4 show the impacts of a new racino are, in net, positive for the State government. Taxes on gaming revenues rise significantly and compensate the dampened benefits from sales taxes via lost tourism dollars. Indeed, total revenues go up by 0.32 percent (\$237.5 million). Still, the lost nonresidents demand for Casinos Resorts and for related tourism basically offset any employment gains from the new racino. The number of jobs created is only almost 13 more than the number of jobs lost, and unemployment benefits change imperceptibly if at all. Still, the State's public deficit falls by 1.2 percent. Indeed, the only real beneficiary of a new, slots-only casino in New Jersey would be the State's tax coffers as real GDP and employment change negligibly

## **5. Conclusions**

This paper evaluates the effects of a new slots-only gaming establishment in New Jersey. We do so using a regional CGE model calibrated to New Jersey in 2010 and by assuming the new facility caters strictly to consumers from out of the state. We further assume that this facility will be permitted to exist only if it agrees to be taxed at a high rate due to lobbying by existing gaming interests within the state as well as to prevailing conditions for similar racinos in neighboring states. We further assume those tax revenues would be paid into the state's general fund to reduce its deficit.

The new gaming establishment would clearly increase nonresident consumption and state tax revenues. But it would also likely harm the state's existing set of Casino Resorts in Atlantic City as well as the sundry set of industries that support tourism there, such as Food and drinking places, Entertainment venues, Hotels, and other retail establishments. We find that, in isolation, the slots-only establishment could be substantial and positive across an array of macroeconomic measures. This is the perspective of those supporting development of the new facility, who are pushing for the facility to regain gambling dollars lost to the Sands in Bethlehem, Pennsylvania. They also are quick to note gambling facilities are likely to arise soon in New York City and will raise similar issues for New Jersey's economy. But the picture painted by the scenario developed for *SimA* is overly rosy. Surely, the visitors lost to Pennsylvania and likely to be lost to New York racinos are not strictly gamblers who reside outside of the state. Moreover, many of the facility's visitors are likely to view it as a substitute not just for out-of-state casinos but also for the state's existing Casino Resort industry, which is currently limited geographically to Atlantic City. In this vein, the naïve set of results from *SimA* should be viewed as revealing extremely optimistic outcomes for the new facility.

As a counter point we developed SimC, which is undoubtedly overly pessimistic from the perspective of the proposed facility's proponents. It assumes that the new facility does in fact substitute for the existing set of Casino Resorts in New Jersey. Moreover, in the simulation it does so such that the revenues of the Casino Resorts fall by \$250 million when the \$500 million racino is operating at full steam. We find that most macroeconomic benefits from the racino become negligible if 50 percent of its revenues are gained at the expense of the state's Casino Resorts (and concomitant tourism dollars are lost). The results show that beyond the owner of the new establishment, the only clear beneficiary of the investment would be the State government. Through improved gaming revenues the State's public deficit would fall by at least 1.2 percent annually, assuming no new spending programs are implemented.

So it is clear the hare should win this time if the state of the State's coffers alone is the basis of decision. The high tax rate on the new facility simply trumps any general equilibrium tax revenue benefits (income and sales taxes on working households) the more investment-intensive Casino Resort industry can muster. This is despite the fact that Casino Resorts must hire people who live in New Jersey and the racino need not. Indeed, if anything, it the tortoise—the state's Casino Resort industry—that seems to be sleeping.

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## APPENDIX

<b>Table A1. SAMNJ-10: Industries</b>	
I1	Agriculture, Forestry and Hunting
I2	Fishing
I3	Oil and gas extraction
I4	Mining
I5	Mining support activities
I6	Electricity, Gas distribution and water
I7	Construction
I8	Food manufacturing
I9	Beverage and tobacco
I10	Textile mills
I11	Textile product mills
I12	Apparel manufacturing
I13	Leather
I14	Wood product manufacturing
I15	Paper
I16	Printing and related support activities
I17	Petroleum and coal products manufacturing
I18	Chemical manufacturing
I19	Plastics and rubber products manufacturing
I20	Nonmetallic mineral product manufacturing
I21	Ferrous and non ferrous metallic production
I22	Other fabricated metal product manufacturing

I23	Machinery manufacturing
I24	Computer and electronic machinery
I25	Electrical equipment manufacturing
I26	Motor vehicle manufacturing and parts
I27	Furniture and related product manufacturing
I28	Medical equipment and supplies manufacturing
I29	Wholesale trade
I30	Retail trade
I31	Air transportation
I32	Rail transportation
I33	Water transportation
I34	Transit and ground passenger transportation
I35	Other transportation
I36	Publishing and communications
I37	Finance and insurance
I38	Real estate and leasing
I39	Other services
I40	Educational services
I41	health care and social services
I42	Performing arts, spectator sports, museums, zoos, and parks
I43	Amusements, gambling
I44	Other recreations
I45	Accommodation
I46	Casinos
I47	Food and drinking places
I48	Automotive repair and goods repair
I49	Personal and laundry services
I50	Religious, civic and similar organizations
I51	Private households
I52	Postal service
I53	Federal Government enterprises
I54	State and Local government enterprises
I55	General Federal defense government services
I56	General Federal nondefense government services
I57	General state and local government services