

THE POLITICAL ECONOMY OF GAMBLING REGULATION

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Abstract

This paper presents an interest group model of gambling regulation and applies it to major changes in the regulation of U.S. gambling markets. Gambling markets are among the most restricted and politicized markets in the American economy, yet economists interested in the economics of regulation have paid them little attention. Applying the economic theory of regulation to gambling markets can lead to greater understanding of current public policy. In addition, this application may shed light on the discipline itself, as to its ability to explain recurrent fluctuations in the extent of regulatory intervention over long periods of time. Broadly speaking, the interest group model is consistent with changes in the extent of regulation, including the recent period of liberalization and consequent growth in gambling.

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I. Introduction

Legalized gambling in the United States, by any measure, grew explosively during the latter half of the 20th Century. Much of this growth stems from a prolonged sequence of state legislation, relaxing regulations that restricted gambling. This is an important transformation in the regulation of the economy. While economists have studied some facets of this transformation, the positive political economy of gambling regulation has received relatively little attention.

This paper presents and analyzes a simple interest group model of gambling regulation. The model yields testable implications that shed light not only on the recent growth of gambling, but also on prior episodes in which restrictions on gambling markets were either relaxed or extended. Indeed, the principal feature of gambling regulation throughout U.S. history is its episodic character. In this paper, these changes are viewed as part of an ongoing political contest between those with a taste or interest in gambling and opponents of the practice.

Gambling is viewed by some people as a benign form of entertainment. Whether legal or not, many people gamble in various forms, and suppliers seek profits by offering them gambling opportunities. The practice has deep roots, and references to it date across cultures to ancient times (Culin, 1992); Harris, 1972, p. 229).

Equally deep-rooted is opposition to gambling, most notably in organized religion. Although there is little explicit discussion of gambling in the Bible, it is known that gambling among Jews was subject to civil punishment (McGowan, 1994, p. 4). Cotton Mather and other ministers in Colonial New England denounced lotteries on the grounds that the prizes won were not "near the whole sum that was deposited by the adventures," were obtained "without the service of anything for it," and thereby encouraged "men to run the hazard of being losers (Ezell, 1960, p. 18)." The arguments of modern church groups have

changed little since then. Gambling is opposed on the grounds that it is a non-productive and inherently harmful activity, financially ruinous to individuals, and corrosive to communities.

These interest groups, pro and con, are engaged in a long-running struggle for control over public policy towards gambling. Opponents would prefer to see gambling banned from their communities, whereas those who find pleasure in gambling, along with potential suppliers, prefer legalization of some form. The outcome of this struggle has varied over time. Some observers (e.g. Rose, 1980, McGowan, 1994), characterize the recent period as the "third wave" of gambling in the U.S., a wave that may be about to crash as in earlier episodes (Rose, 1991). The model presented in this paper sheds light on this question.

The paper proceeds as follows. Section II identifies significant changes in policy towards gambling in American history. Section III presents an interest group model tailored to the question of gambling restrictions. Section IV applies the model to the facts discussed in Section II. Section V concludes, and addresses the question of whether the "third wave" of gambling is about to crash.

II. Changes in the Regulation of Gambling

Gambling has existed in various forms, legal and illegal, off and on, throughout U.S. history. Three forms of gambling -- lotteries, casinos, and wagering on horse races -- are the focus of this study. Each of these forms has experienced regulation varying in intensity from outright prohibition to widespread tolerance. Table 1 lists the historical periods in which regulatory policy towards gambling changed. The main features of these periods are discussed in turn.

A. Colonial Lotteries: From Jamestown to Jackson

Lotteries were a common feature, and a recurrent policy issue, from colonial times to 1830. The Virginia company was financed, in part, by a series of lotteries held in England between 1612 and 1620 (Findlay, 1986, pp. 12-13). The resort to lottery finance by the Virginia Company can perhaps be understood in light of the fact that capital investments in early colonial ventures were "financial disasters" (Walton and Robertson, 1983, pp. 42).

As colonial America expanded, lotteries were used to finance construction of churches, roads and bridges, and capital projects of colleges and universities, Columbia, Dartmouth, Harvard, and the University of North Carolina among them (Chafetz, 1960, pp. 22-3). Private lotteries were also abundant. While some private lotteries were pure and simple gambling opportunities, others were used to dispose of significant property, such as houses, land, even slaves (Ezell, 1960, p. 13-16). In this regard, Thomas Jefferson stated that "an article of property, insusceptible of division ... is sometimes of so large a value as that no purchaser can be found while the owner owes debts... The lottery is here a salutary instrument for disposing of it (Ezell, 1960, p. 13)."

The use of private lotteries was subsequently accompanied by state intervention. In 1719, Massachusetts passed a law requiring legislative authority for lotteries. Other colonies soon followed: New York in 1721, Connecticut in 1728, Pennsylvania in 1729, Rhode Island in 1732, and New Jersey in 1748 (Ezell, pp. 18-22).¹ Ezell (1960) attributes this wave of legislation as a response to problems of fraud. Regardless of cause, the period beginning

¹ In the case of Pennsylvania, an unauthorized lottery was subject to a fine of 100. The fine was small enough however, that it was eventually interpreted as a mandatory fee for operating a lottery. Most Pennsylvania lotteries were subject to the "fee" (Ezell, 1960, p. 98).

circa 1720 is thus regarded as one of transition from an era of relative laissez-faire to era of state licensing of private lotteries, as listed in Table 1. Despite the legal requirement that a lottery operator be licensed, lotteries (both authorized and unauthorized) remained common in this period (Ezell, 1960, pp. 53-54). In addition, government-run lotteries continued to be used to fund public works and military expenses by state and local governments, and the Continental Congress.

The sustained reliance on lottery finance for the purpose of financing public expenditure led to the emergence of middlemen -- ticket brokers who bought large blocks of tickets at a discount and marketed them to the masses (Ezell, 1960, p. 82). Over one hundred sixty lottery offices existed in New York City in 1826; Portland, Maine had twenty-five lottery shops, and Baltimore forty (Ezell, 1960, p. 98).² The number of lottery offices in Philadelphia increased from three in 1809, to sixty in 1827, and over two hundred in 1833 (Ezell, 1960, p. 209). Clearly, lotteries were a significant business and a common feature in this period.

Nevertheless, by 1830 anti-lottery groups had successfully seized on abuses, notably the numerous unauthorized lotteries (U.S. DOJ, 1977, p. 83). In 1833, Pennsylvania, Massachusetts, New Jersey, Maine, and Connecticut passed legislation banning lotteries. A problem faced by many states was the practice of granting open-ended charters to institutions for the purpose of raising specified funds (college libraries, for example). By the 1850s, sunset legislation for such charters was accepted by the courts (Ezell, 1960, pp. 177-203). Many subsequent lottery bans were constitutional -- Louisiana (1845, 1852), Illinois (1848), Indiana (1851), Kansas, Minnesota, Oregon, South Carolina (1850), Virginia (1850) -- other bans were statutes which levied fines (Alabama, California, Georgia) (Ezell, 1960, Ch. 11). By 1860, lotteries were

confined to only a few states -- notably Delaware and Kentucky, and Missouri. In March of 1860, *The Friend*, a Quaker publication that had agitated against lotteries for decades, expressed its gratitude for a successful campaign (Ezell, 1960, p. 229). The period from 1833-1850 is 1860 is referred to in Table 1 as Abolition I.

B. Southern Lotteries

Lotteries were revived by Southern states during and after the Civil War. Louisiana's 1864 constitution gave the legislature the right to tax lottery vendors, a power that was soon employed (U.S. DOJ, 1977, p. 283). Lotteries for the purpose of funding state universities in Alabama (1866) and Mississippi (1867) were re-authorized, as well as lotteries in Georgia (1866) and Kentucky, where a 1857 statute voiding lottery franchises was held unconstitutional (Ezell, 1960, pp. 230-238). These lotteries -- Louisiana in particular -- thrived by selling tickets in the North. Use of the mail for lottery transactions was banned by Federal law in 1868, although the law was ineffective and revised several times in the next 22 years (U.S. DOJ, 1977, pp. 501-523).

As southern economies and governments strengthened, lottery charters ceased to be renewed. By the mid-1880s, only the Louisiana Lottery remained, and it faced continuing challenges from reformers throughout the country. An additional Federal law banning the use of the mail for lottery purposes passed in 1890 and was successfully enforced. The reduced revenue, coupled with a vote-buying scandal, led to an effective a end to the Louisiana lottery in 1895 (Ezell, 1960, pp. 263-70; U.S. DOJ, 1977, 285-6), as its charter was never renewed. The year of 1895 marks the end of the Southern Lottery period and the beginning of Abolition II.

² A British traveler's description illustrates how common lottery offices were in New York: "They are numberless on Broadway. Their puffing exceeds all

C. Modern State Lotteries

Legal lotteries reappeared in the United States with the New Hampshire Lottery in 1965. Beginning with New York and New Jersey, state-run lotteries spread from New England and the Mid-Atlantic states to the rest of the country. By the year 2000, 38 states had instituted a legal lottery, and South Carolina made preparations to do so by passing a referendum removing its constitutional ban. The cumulative number of states with a lottery in the period 1965-present is portrayed in Figure 1.

As in earlier periods, funds raised by modern state lotteries are commonly earmarked. Twenty-eight of the 38 states earmark lottery revenues for specific purposes, the most common being education (Clotfelter et al, 1999, p. 7). Government revenues generated by lotteries comprise 2.2 percent of own-source revenue in lottery states, approximately 1/10 the magnitude of sales or income tax revenue (Clotfelter et al, 1999, p. 8). Clearly, the revenue generated by lotteries is a minor, but not insignificant portion of state government revenue.

D. The Wild West

The heyday of gambling in the west spanned the latter half of the 19th century, a time when New England laws saw fit to levy fines on tavern owners that allowed card games to take place (Chafetz, p. 205). The pattern of laws in the West is instructive. Initially open to gambling, frontier jurisdictions began to restrict it, albeit at a pace that varied from state to state. States in the Midwest settled by farmers acted promptly to pass anti-gambling laws, whereas states in the far west were much more likely to license and tolerate gambling establishments (U.S. DOJ, 1977, 378-87)

belief" (quoted in Ezell, p. 215).

The case of California is particularly well documented (see Table 1). Triggered by the discovery of gold at Sutter's Mill in 1848, 40,000 migrants arrived in San Francisco in 1849, a significant share of California's population of about 107,000 at year end (Umbeck, 1977, 209-210). Gambling houses sprung up immediately in the center of the San Francisco business district (Findlay, 1986, 89-91). From 1850-1855, both state and local governments licensed gambling establishments and collected quarterly fees and excise taxes. State laws passed in 1855, 1860, 1863, 1885, and 1891 successively increased the restrictions on gambling operators, and ultimately consumers (Findlay 1986, 95-99). Montana, by contrast, continued to license and tax gambling establishments at least as late as 1887 (U.S. DOJ, 388).

Although gambling was legal in Nevada from 1869-1909, players were "generally relegated by law to back rooms and second floors" and betting was treated as a secondary line of business in "bars, dance halls, and bordellos" (Findlay, 1986, p. 108). Nevada banned gambling in 1909, repealing the ban in 1931.³

In 1987, the U.S. Supreme Court's decision in the Cabazon case opened the door to casino gambling on Indian land, outside of state control. Subsequently, non-Indian casinos were authorized in nine additional states in the late 1980s (see Eadington, 1999, for a concise history). By 1996, half of the states allowed casinos of some form -- Indian, Riverboat, or land-based -- although not all had started operations. By 1998 casino gaming revenues were larger outside of Nevada than in it (Eadington, 1999).

E. Horse Racing

Prior to the recent spread of lotteries and casinos, pari-mutuel horse racing was the principal gambling opportunity in many states during the 20th

³ For reference, prohibition became law in 1919 when the 36th state, Nevada, ratified the amendment. Prohibition was repealed in 1933.

century. Yet horse racing's history is episodic as well. Its American origins date to colonial times in the Carolinas and Virginia. Initially, racing and betting were informal affairs conducted among the landed elite (Breen, 1977, Robertson, 1964). Racing's popularity grew steadily and became increasingly organized and commercial in the last half of the 19th century (Robertson, 1964). For example three of the most historically significant tracks still in operation today were established in this period: Saratoga (1864), Pimlico (1870), and Churchill Downs (1875).

As horse racing grew as a business, opposition to betting on horses increased as well. Between 1890 and 1910, all of the major racing states faced movements to ban betting on horse races. As a consequence, the number of racetracks in the U.S. dropped from 314 to 25 between 1897 and 1908. In New York, a series of anti-bookmaking laws was passed in New York from 1895-1910 (U.S. DOJ, 1977, pp. 200-2). Racing survived there only because bookies successfully used an oral system to avoid the statutes. By 1909, the sport of horse racing had been "curtailed or abolished in all but three states" (Thomas, 1995).⁴

Again, however, there was a revival. In 1927, Illinois joined Kentucky and Maryland by legalizing pari-mutuel wagering. The depression brought a burst of legalization - in 1933, "motivated primarily from a need for revenue," no less than 10 states legalized pari-mutuel wagering (Robertson, 1964, U.S. DOJ, 1977, p. 362).⁵ This is the single largest liberalization (measured by the number of states passing less restrictive laws) of gambling on record. In total, twenty one states brought back racetracks during the 1930s. This sharp

⁴ Even Churchill Downs, home of the Kentucky Derby since 1875, was threatened by a ban on betting imposed by the mayor of Louisville in 1908. Much of the opposition to racing in this period focused on the "scandalous" practices of bookmakers. Churchill survived by replacing bookmakers with parimutuel machines after a favorable court decision (see Thomas, 1995, p. 128). Maryland's passage of a parimutuel law in 1912 allowed racing to continue unabated there.

increase in the number of states allowing pari-mutuel wagering on horse races constitutes the final period of interest.

F. Can These Changes Be Explained By a Parsimonious Model?

The next section presents a political economy model which we use to examine these facts. The model is adapted from Becker (1983), and emphasizes equilibrium changes in the outcome of political competition among interest groups. The key factors highlighted in the model are changes in the dead weight costs of taxation, and in the relative influence of interest groups that find either value or harm in markets for gambling. Straightforward movements in variables observed during the periods discussed above feed into political influence functions. Shifts in these functions alter the equilibrium outcome, thereby providing a potentially refutable account of changes in the degree of gambling regulation.

III. An Interest Group Model of Gambling Regulation

III.A. Political Economy Models of Gambling

This section adapts Becker's (1983) model of political competition between interest groups to the problem of gambling regulation. These groups attempt to influence the outcome of a political process, in particular laws passed by a democratic legislature. For simplicity we assume two interest groups; one group's welfare is maximized when gambling markets are allowed to operate free of government interference. The other group's welfare is increasing in the level of restrictions on these markets. Political competition between these groups determines the equilibrium level of restrictions.

⁵ New York passed legislation authorizing pari-mutuels in 1940, ending approximately 35 years of wagering under the "oral system" (U.S. DOJ, 1970, p. 206).

Observable changes in factors otherwise unrelated to gambling markets influence the political outcome, and enable the model to be tested.

There has been relatively little attention given to the positive political economy of gambling regulation. Eadington (1984) discusses the political economy of casino gaming, but does not provide a model with the aim of explaining the evidence described above.

Filer et al. (1988) adapt Peltzman's (1976) model of the vote maximizing regulator to examine the recent wave of lottery adoption by the various states. Their model focuses on the use of lotteries by state governments as a means of raising revenue. This focus seems clearly justified in light of the historical discussion in Section II. The model of Filer et. al implies that states with higher tax burdens are more likely to use lotteries. They present empirical evidence which is consistent with the model: states with higher tax burdens are more likely to be lottery states. In addition, among lottery states, those with higher tax burdens adopted lotteries earlier than others.

The interest group model in this paper captures the view that gambling markets are potential sources of utility, social costs, and means of financing capital goods or obtaining government revenue.⁶ The first two items are self evident. The historical record of colonial America, and Filer et. al's evidence from the recent period, confirm the idea that fiscal issues may be important components of the decision to permit gambling. In addition to factors which directly affect the relative power of the interest groups, a key element in the model is the opportunity cost of lottery finance, and changes in this cost over time.⁷

⁶ One can think of the conflict between the 2 groups along the following lines. Gamblers enjoy the activity, but while engaged in it advertise its existence to others. Non-gamblers incur costs related to bankruptcy, crime, and so on, which are believed to stem from gambling. In addition, parents prefer that their children not be exposed to such consumption activities at an early age.

⁷ Becker and Mulligan (1998) present a model which attempts to explain the size of governments based on the relative efficiency of tax systems across countries. The model in this paper works in a similar fashion (both are natural

III.B. An Interest Group Model

Suppose that Q^0 represents the level of gambling that would be realized in the absence of restrictions on gambling markets. Assume that consumers and producers of gambling are self-interested and rational, and ignore any costs imposed on others. Hence, Q^0 represents the level of gambling that maximizes the welfare of these individuals, which are labeled as group G , and of which there are N_G in number.⁸ G 's welfare decreases when restrictions are imposed that reduce the level of gambling. As a result, G devotes resources to political action which attempts to minimize the decline in gambling opportunities.

The anti-gambling group A , is composed of N_A members. A prefers that gambling be curtailed, and they devote resources to that end. The outcome of interest is the reduction in gambling from the unrestricted level

$$R = (Q^0 - Q(L))$$

where $Q(L)$ is the level of gambling after the imposition of restrictions L .

Let θ and α be the per capita expenditures for each group, so that the resources spent by each group are $g = \theta N_G$, and $a = \alpha N_A$, respectively. The relative magnitudes of θ and α will clearly be related to coordination issues and free riding, but we put these issues aside for the time being.⁹

extensions of Becker, 1983), although in this paper the causality is reversed: Changes in the size of government are treated here as an exogenous factor which affects the dead weight costs of taxation, given a fixed portfolio of tax instruments.

⁸ Distributional issues within the interest groups, while clearly relevant in general (as in the seminal work of Olson, 1965), are ignored here. A focus on these issues could explain additional features of gambling regulation, but is not needed to develop the basic ideas pursued in this paper.

⁹ It is changes in relative coordination costs between the two groups, not levels, that is important for applying the model to historical data. Clearly, a decrease in the coordination costs of one group would increase its political influence. We return to this issue briefly when considering alternative explanations of the historical changes in policy towards gambling.

Political activity, as in Becker's model, is a black box $P()$, which transforms these resources into outcomes. The process is given by

$$R = P(a, g) \text{ where}$$

$$P_a > 0; P_{aa} < 0$$

$$P_g < 0; P_{gg} \geq 0$$

Let $W = W(R, N_G)$ be a standard welfare measure denoting the decline in gains from trade between gambling suppliers and consumers due to restrictions. Assume that $W \geq 0$ for $R \geq 0$ (the range under consideration), with $W_R > 0$, $W_{RR} < 0$. Thus, Group G incurs a welfare cost that is positive and increasing in the degree of restrictions imposed on gambling markets.

Group G 's objective is to minimize the sum of lobbying expenditures and welfare costs, $g + W$. This is done by choosing the per capita expenditure on lobbying, θ . Working with the first order condition of this problem, it is easy to show that optimizing behavior on the part of group G implies $W_R P_g = -1$. When this condition is satisfied, a marginal dollar of political expenditure yields a dollar reduction in the welfare cost of restrictions.

Group A consists of people who want gambling restricted. Assume that the welfare of group A is diminishing in the quantity of gambling done by others and thus increases with the level of restrictions imposed on gambling markets. Suppressing other arguments for the moment, let the value of restrictions to group A be given by $V(R, *)$ with $V > 0$ for $R > 0$. Gambling restrictions are assumed to be subject to diminishing returns, hence $V_R > 0$ and $V_{RR} < 0$. Opponents are assumed to maximize the value of restrictions net of political contributions, $V(R, *) - a$. Optimizing behavior thus implies that $V_R P_a = 1$. Since the first order conditions are monotonic, the reaction functions implied

by optimizing behavior will yield a unique solution for R which can be characterized by

$$W_R = - V_R P_a/P_g$$

It simplifies the discussion to assume the following about political influence. First, assume that politicians are motivated by contributions, but are indifferent to their source. Further assume that the gambling industry is a small part of the political problem, such that the marginal value of contributions from this sector is constant. These assumptions imply that $P_a = -P_g$ and hence the political equilibrium can be characterized by

$$W_R = V_R$$

This is a simple statement that in equilibrium, the marginal value to group A of restricting gambling is equal to the marginal welfare cost imposed on group G. Increases in the consumption value (perceived social cost) of gambling result in decreases (increases) in the equilibrium level of restrictions. If the simplifying assumptions given above are relaxed, the marginal welfare impacts in equilibrium are weighted by the relative effectiveness of each group at the margin.

The political equilibrium depicted here is a standard Peltzman/Becker form, but additional structure is required in order to apply it usefully to the problem at hand. This is achieved by extending the preferences of the gambling opponents. It is clear that preferences of this group are not lexicographic - that is, gambling opponents willingly accept some gambling in exchange for goods that are of value to them.¹⁰ For example, modern religious groups solicit

¹⁰ Indeed, this is axiomatic in the model, since there is a tradeoff between contributions and restrictions that group B must face.

contributions through small scale lotteries and bingo games, and as discussed earlier, churches resorted to lotteries early in U.S. history in order to finance capital projects.

To incorporate this aspect of preferences, assume the marginal value of gambling restrictions is negatively related to dead weight costs of alternative means of public finance. Specifically, assume that δ is an index of the dead weight costs of alternative means of financing capital projects and public goods. Let $\delta = \delta(\epsilon, \tau)$ where ϵ serves double duty as an index of efficiency of both financial markets and the tax system. Hence $\delta_\epsilon < 0$. τ is the marginal tax rate. $\delta_\tau > 0$ since the dead weight costs of taxation are increasing in the marginal tax rate. A complete description of the preferences for gambling restrictions by A is thus $V(R, \delta(\epsilon, \tau), N_A)$, with $V_{R\delta} < 0$. The marginal benefit to G of gambling restrictions is assumed to decrease with the dead weight costs of taxes. In effect, this statement about preferences claims that church people like roads, bridges, and steeples, and will reduce their opposition to lotteries if the opportunity cost of lottery finance increases.

IV. Application of the Interest Group Model to U.S. Gambling History

We are now in a position to use the model to analyze important changes in the regulation of gambling in U.S. history. The periods identified in Table 1 are the target of the empirical application of the model.

IV.A. Lotteries

In the colonial period, both capital markets and the power of the government to tax its citizens were poorly developed. As McGowan (1994, p. 9) points out, "[l]otteries were an essential form of financing public projects for colonial governments since their ability to levy taxes was always being attacked." In addition, credit markets and institutions were nonexistent or poorly developed throughout the colonies in the 17th and 18th centuries. The model implies that in this period V_R is low relative to periods in which capital markets and ability to tax were well developed. The high opportunity cost of lottery finance lowers opposition, hence restrictions are minimal, and lotteries relatively abundant.

Following the War for Independence, increases in the Federal Government's ability to tax were coupled with dramatic improvements in the ability of public and private institutions to borrow in the capital markets. Sylla (1998) discusses the Federalist financial revolution that took place between 1790 and 1840. Sylla argues that during this period, American financial institutions were transformed from a relatively undeveloped state to perhaps the most sophisticated in the world.

One illustration of the financial transformation is the growth in the number of state chartered banks. The number of such banks rose from only three in 1790, to 102 in 1810, and 584 by 1830 (Sylla, 1998, p. 86). Participants in the lottery ticket business were directly involved in finance during this period. The New York firm of S. & M. Allen was established in 1808 and sold lottery tickets, exchanged bank notes at a discount, and traded in shares of private companies. By 1823 however, S. & M. Allen, along with other companies, abandoned lottery ticket sales in favor of trading in more stable investments (Ezell, 1960, p. 83). The transformation of these businesses illustrates the essential link between lotteries and finance during the period, and the

significant increase in the relative efficiency of stable (non-lottery) financial institutions discussed by Sylla (1998).

In terms of the model, these changes increase financial efficiency, ϵ , and reduce the dead weight costs of alternative means of finance, δ . The decrease in δ increases V_R , leading to an increase in the restrictions imposed on gambling markets. Figure 2 provides a simple illustration of the change in equilibrium restrictions. Increases in the efficiency of credit institutions and tax systems shift V_R to V_R' , resulting in an increase in the degree of restrictions imposed on gambling markets from R_0 to R_1 . The model thus successfully explains the transformation from a relatively unrestricted market for lotteries to the period of Abolition I. The southern lotteries in the post-civil war period can be viewed as a reversal of this trend: weakened economies and state governments in the south reduced the efficiency of taxation, leading to reduced opposition to lottery finance.

The prior shift from laissez faire to licensing circa 1720 is more problematic for the model. If we take Ezell's (1960) suggestion at face value that licensing was a response to problems related to fraud and abuse, one must recognize the possibility that some government restrictions might create value for gambling consumers. High levels of fraud and abuse reduce the welfare cost of restrictions which reduce fraud. This is not central to the model however. An alternative explanation is that unauthorized lotteries provided competition to governments in raising revenues, and as the colonial governments became more stable, they were able to impose some degree of restriction on substitutes which diminished their own means of finance.

Let us turn now to 20th century lotteries. A dominant trend of the 20th Century U.S. was the increased role of government in the economy. Both direct government spending and transfer payments increased significantly throughout the period. Since these expenses must be financed, the share of income that is

taxed rose significantly. Figure 3 portrays Federal and State tax revenue as a share of GDP. This figure increased from 10.9% in 1929 to 31.9% in 1997. A natural assumption is that the dead weight cost of taxation is increasing in the share of income taxed, τ . The 20th century thus exhibits a sharp increase in δ , which leads to a similarly large drop in V_R . From the perspective of the model, it is no surprise that gambling restrictions have been eased as a means of realizing government revenues.¹¹ What is somewhat problematic for the model is that much of the increase in τ occurred prior to 1950.¹² However, it may not have been clear in 1950 that the increase in the size of government was permanent, and that tax distortions as a result would be permanently higher.

In the model's favor is the timing of the adoptions in western states. Prior to the property tax revolt and the passing of Proposition 13 in 1978, there were no lotteries in the West. The property tax revolt significantly reduced the reliance of states on property taxes, particularly in the west. Data from O'Sullivan et al (1995, p. 26) on the share of state revenue from property taxes in 1977 and 1987 is reproduced in Table 2 for the Pacific states, Arizona, and Colorado. With the exception of Oregon, these states reduced property taxes significantly between 1977 and 1987. Most notably, Arizona and California were states with relatively high reliance on property taxes in 1977 (ranked 20th and 10th respectively). By 1987, these states had fallen to 45th and 48 among the 50 states and D.C. in this ranking. All states in the table, beginning with Arizona in 1981, passed lottery bills in the 1980s.

¹¹ Note also that, if high tax rates penalize capital formation in the economy, reducing economic activity below some desired level, one method of working around the problem is to allow previously prohibited industries such as gambling to operate, which initially will offer high marginal returns.

¹² A hypothesis consistent with the model and the trend apparent in Fig. 3 is that states increasingly relied on pari-mutuel revenues during the period prior to introducing lotteries.

IV.B. Frontier Casinos

State policies toward casinos are certainly more complex than the simple analysis pursued here. Nevertheless, some features of these policies are amenable to the model. Midwestern states passed laws banning gaming machines and establishments relatively quickly (DOJ, 317-324), whereas states on the Western frontier were much more likely to license and tax gambling. The Department of Justice Reports interpretation of this divergence is based on differences in the composition of the population. Midwestern states with rich farmland such as Iowa were quickly settled, and stable farm communities formed. In contrast, the West was initially "inhabited by strays -- cowboys, prospectors, miners, and fur traders. It was a crude region, populated almost exclusively by men (DOJ, 1977, p. 373).

The relatively tolerant policies of the West can be understood in the context of the model if one accepts the proposition that the people just described are far more likely to be members of the G group. Initially, opponents of gambling are simply absent, and there is no demand for restrictions. Settlement of the west increases N_A relative to N_G , thus increasing V^R and increasing the equilibrium level of restrictions.¹³

In addition, widespread settlement and development of government institutions reduces the attractiveness of relying on a ready source of gaming revenues from taxes and licensing. Easterlin (1976) points out that settlement of the frontier implied sharply higher land values, increasing the tax base and easing the fiscal pressures on governments. As Chafetz (1960, 205) puts it, permanent settlers migrating to the West "brought their laws with them."

¹³ In addition, a reader has suggested that the tendency to ban gaming machines in the eastern states prior to the lotteries may be explained by relative monitoring costs. Since lotteries are more easily monitored, they offer a less costly means to raise revenue (ticket are more easily counted than rolls of the dice, for example). In terms of our notation, $*$ (the opportunity cost of tax finance) is significantly lower for casino gambling than lotteries. Hence casinos are more likely to be banned.

IV.C. Exogenous Shocks and Policy Changes

Most of the episodes discussed above are lengthy, long term affairs. Hence, while they are plausibly explained by the model, the nature of these episodes lacks a timely, tight link between changes in exogenous factors and the regulatory response. There are three episodes which offer a timely link between exogenous shocks and policy change. The effects of the Civil War on state governments in the south, of the Great Depression on state governments in general, and the property tax revolt on Western States, all comprise clear-cut examples of exogenous financial shocks associated with increases in the dead weight costs of taxation. Again, increases in δ reduce V_R , and decrease the restrictions imposed on gambling. This is consistent with the re-emergence of state lotteries in the post-civil war south, the burst of pari-mutuel legalization in the 1930s, and the timing of lottery adoption by western states. Indeed, in the case of West Virginia, legalization of pari-mutuel wagering in 1933 has been described as a "response to a (fiscal) crisis" and "a radical departure from the state's anti-gambling policy" (U.S. DOJ, 1977, pp. 300-1). The close association of these policy changes with movements in variables highlighted by the model gives credence to the claim that this analysis offers a parsimonious framework and useful account of the changes over broad stretches of U.S. history.

IV.D. An Alternative Framework

A alternative to the explanation offered above focuses exclusively on variation in the political influence of religious groups over time. Fogel (2000) discusses the connections between political reform and religious revival over the course of American history. Based on McLoughlin's (1978) analysis of revivals and reforms, Fogel identifies four "great awakenings" in American

history and associated periods of political reform. Fogel makes the case that religious revivals precipitate "powerful political programs and movements." In terms of the model presented above, an explanation of changes in gambling policy can perhaps be associated with changes in the cost of coordination within the A group, rather than shifts in the fiscal variables discussed above.

Table 3 identifies the periods of revival discussed by Fogel (2000). Although Fogel identifies periods of rising political effect subsequent to the revivals, his analysis focuses on much broader social and ethical issues. Suppose one adopts the working hypothesis that gambling markets would be particularly appropriate targets for reform stimulated by religious revival, and thus likely to receive early attention. The tightening of restrictions on private lotteries in the 1720s, the initial period of abolition in the 1830s, and the purge of racetracks at the turn of the twentieth century are closely linked to periods designated by Fogel as religious revivals. This suggests that study of the economics of reform movements may yield further insights. What appears anomalous for this approach is the coincidence of the fourth great awakening and the significant increase in gambling that we are currently experiencing.

VI. Conclusion

Some commentators argue that the growth of gambling in the U.S. is due to changing preferences, and (oddly, in light of Fogel and others' work) is symptomatic of a decline in the influence of religion. The model presented in this paper provides an alternative explanation. In this model, the driving force behind the current wave of gambling is the increased size of government in the economy. Higher government spending entails higher tax rates. By increasing the dead weight cost of taxation, increased government spending leads to a search for alternative sources of revenue.

Roughly four hundred years of U.S. history reveals that suppliers and consumers stand ready and willing to provide government revenue in exchange for gambling opportunities. Periods of liberalization occur when existing revenue sources dry up or when the shadow price of new revenues increases. The strengthening of weak governments and increases in the efficiency of tax instruments can be plausibly linked to prior periods of gambling curtailment.

From this perspective a reversal of the current trend of gambling liberalization would likely require a significant change in fiscal trends. Specifically, decreases in government spending and transfer payments, the ultimate source of taxes and their associated dead weight costs, must decline for the model to provide a credible prediction of the end of the current wave of gambling. As long as the shadow price of government revenue remains high, the political equilibrium requires that high cost revenue sources, such as gambling markets, will be utilized as a means of public finance.

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Number of State Lotteries

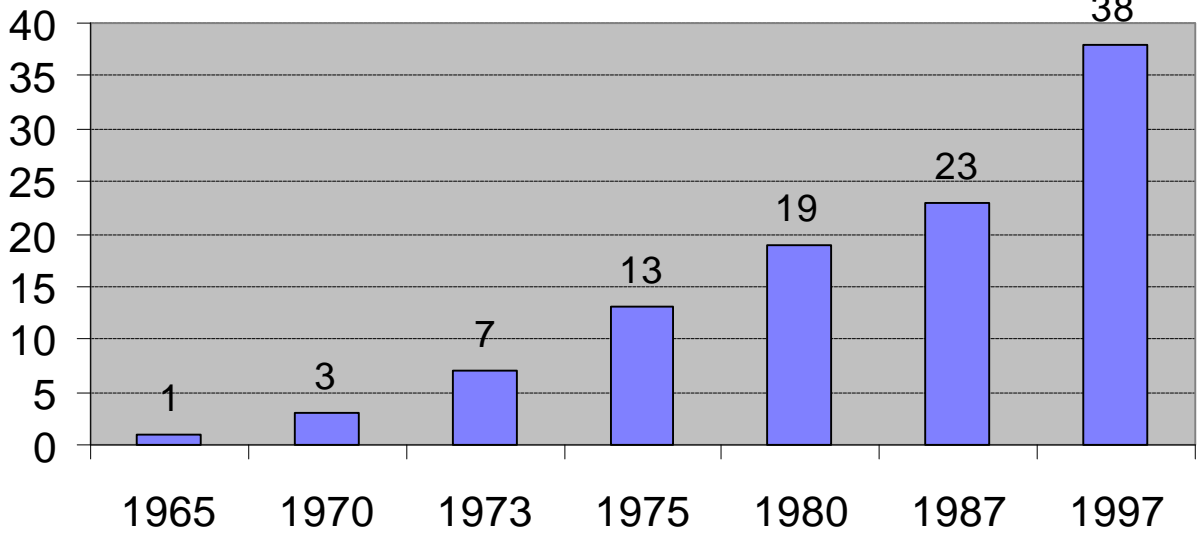


Figure 1

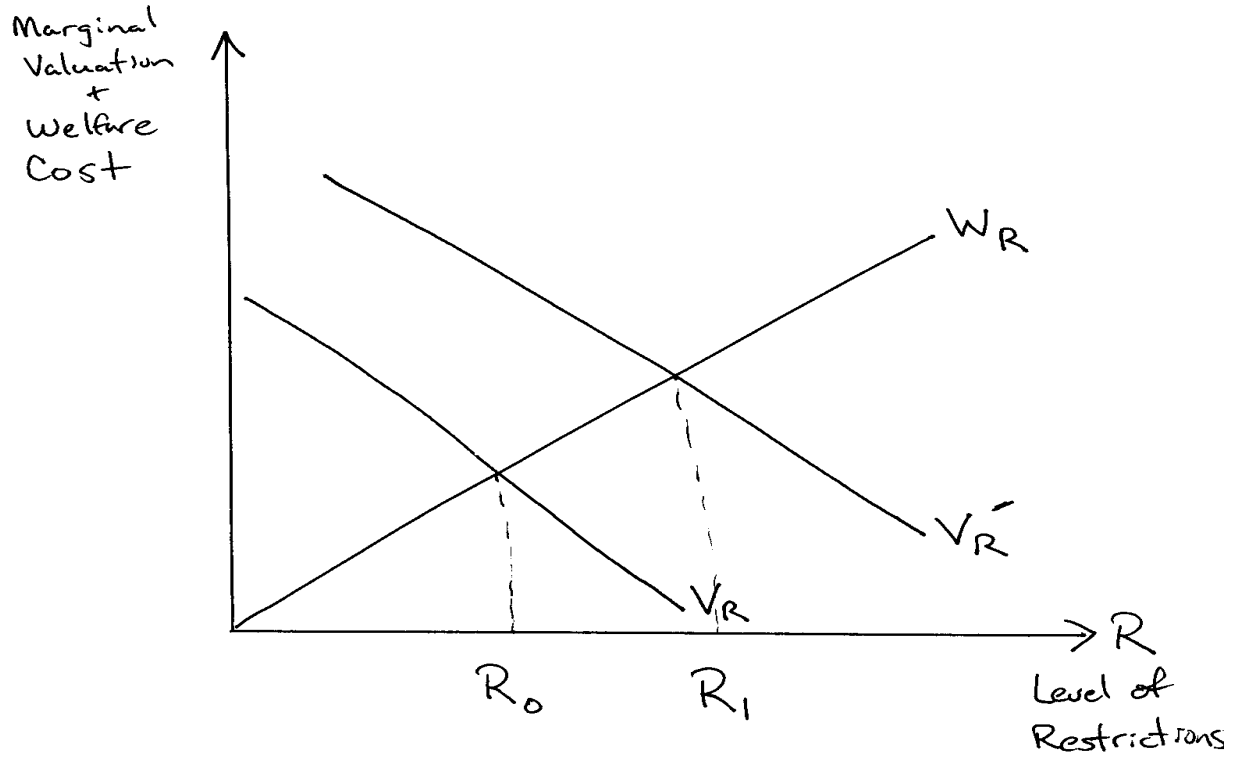


Figure 2

Tax Burden In the 20th Century U.S.

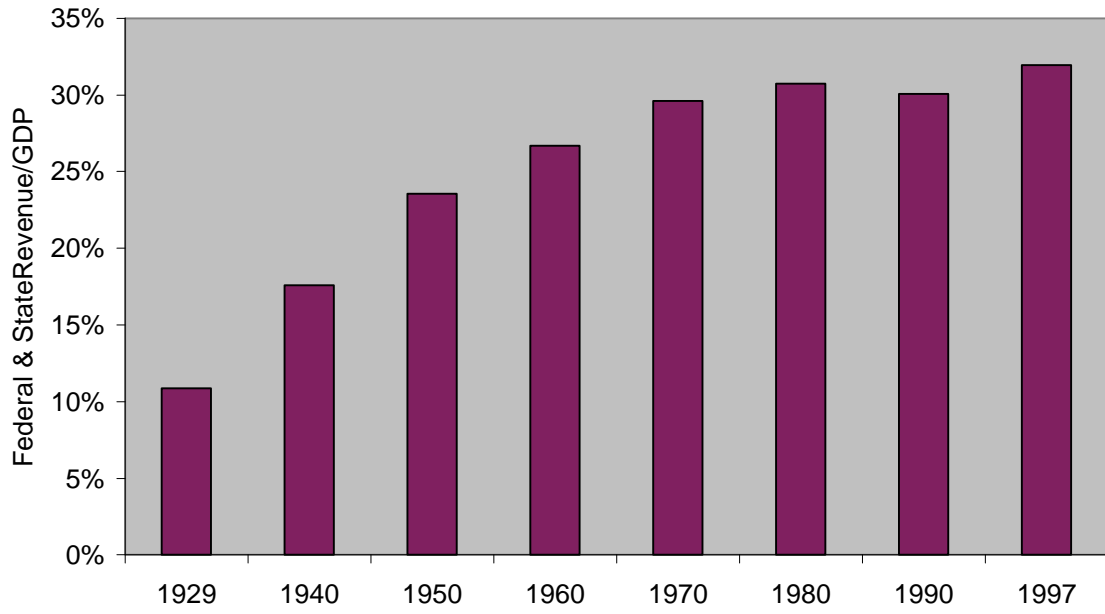


Figure 3

Table 1

Gambling Markets & Restrictions in U.S. History

Form of Gambling / Era	Time Period
Lotteries	
Laissez Faire	1621-1720
Licensed Private & Public	1720-1833
Abolition I	1833-1860
Southern Lotteries	1861-1895
Abolition II	1895-1965
Modern Lotteries	1965-present
California Casinos	
California Gold Rush	1848-1849
Licensed Gambling Establishments	1849-1855
Successive Legislative Restrictions	1855-1891
Horse Racing	
Commercialization	late 19 th Century
Abolition	1900-1909
Rebirth of Parimutuel Racetracks	1933-present

Table 2

Property Tax Revenues in Western States

State	Percent of State Revenues 1987	Rank Among States 1987	Percent of State Revenue 1977	Rank Among States 1977
Arizona	0.66	45	1.72	20
California	0.55	48	2.21	10
Colorado	0.93	30	1.80	16
Oregon	2.26	2	2.25	7
Washington	1.10	23	1.75	19
United States	1.15	--	1.67	--

Source: O'Sullivan et al (1995, p. 26)

Table 3

Religious Revivals in American History

	Period of Religious Revival
First Great Awakening	1730-60
Second Great Awakening	1800-40
Third Great Awakening	1890-1930
Fourth Great Awakening	1960-?

Source: Fogel (2000, p. 28)