

A Normative Analysis of Gambling Tax Policy

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Abstract

This article surveys the application of normative tax theory to gambling tax policy. The analysis suggests that fixed license based taxes may be preferable to taxes on gross gaming revenue. Where output based taxes are used, the types of gambling whose demand is more price sensitive, and the types that have positive links to other industries, should be taxed at comparatively lower rates. Sin-based taxes are noted to increase economic welfare, but only when applied with a rate commensurate to harm that is external to the gambler and the operator. Finally, inter-jurisdictional competition is identified as an important consideration in tax policy and enforcement.

Keywords: gambling tax, taxation theory, public revenue

Introduction

Gambling is among a small group of sectors that is subject to tax policies which are different from the rest of the economy. Unlike most other industries, casinos, lotteries, horse racing, remote gaming, and nearly all other forms of gambling tend to be taxed at rates over and above those of typical businesses. These tax policies are also often applied inconsistently from jurisdiction to jurisdiction (Christiansen, 2005; Henchman, Raut, Duncan, 2012). This study provides a normative analysis of gambling tax policy, using economic theory and empirical gambling studies to describe how government taxes levied on the gambling industry should be structured to maximize economic welfare. In particular, this study provides guidelines for tax policies that maximize economic welfare in the local economy.

Positive analysis is also provided to highlight actual policies used in the gambling industry. This perspective is necessary to fully understand the normative suggestions, since policy decisions by politicians and bureaucrats are often made with objectives other than to maximize economic welfare. In particular, Smith (1998) and Walker and Jackson (2008) have suggested that the reason for the observed tax levels is that gambling taxes have been set in order to capture economic rents, rather than to internalize negative externalities or to maximize economic welfare. Similarly, Chen and Chie (2008) found that average lottery tax rates were quite close to the public revenue maximizing estimates that they produced. Not all authors agree on the motivation for tax policy, and indeed some cite multiple objectives. Adam Rose and Associates (1998) and Meich (2008) both suggest that tax rates reflect a joint objective to raise public funds and to punish an activity characterized as sinful.

This article is separated into distinct areas of tax theory, some of whose policy recommendations may be in conflict with others. The overall findings are summarized in the conclusion, which provides a conceptual overview for how the policy suggestions may interact.

First and Second-Best Taxation

First-best taxation is characterized by what is known as a non-distortive tax, such as lump-sum taxation (Mankiw, Weinzierl, and Yagan, 2009) – effectively, it is a transfer of wealth to the government that does not affect marginal decision making and therefore

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does not distort what would have been the competitive equilibrium in the absence of a tax¹. For example, if all residents are forced to pay the government a previously unknown and one-time fee, that would cause minimal distortions, since it would not affect marginal decisions of production. The choice of which products to consume to provide the greatest return remains the same for all members of the economy. We would observe no changes in consumption throughout the economy.

A tax on a specific product is distortive. A commodity tax generally makes its product more costly to consumers and producers (the specific incidence depends on market elasticities), and although it may not cause all consumers to change their consumption, it will cause the marginal consumers to change their consumption pattern. This distorts the economic decisions that would be made in an efficient and tax-free economy, and therefore lowers the economy from its maximum possible output.

In the supply controlled gambling industry, where the number of casino licenses or gambling stations are typically limited by a government quota, a gambling tax that is sufficiently small may actually be non-distortive. An initial deadweight loss is created by government restricting the supply of gambling in the market, and a license fee or revenue tax that is smaller than the economic rents will simply redirect operator profit to the government, without further changing the level of consumption in the market. Of course, even though the tax may be non-distortive if it is sufficiently small, the market restrictions caused by the gambling license quotas is distortive.

As shown in Figure 1, if the maximum number of licenses in the market is restricted to Q^r from the competitive equilibrium of Q^* , then the restricted market price will be P^r . Unless a specific tax on the license is so large that it discourages entry into the market, the tax on the casino license will not cause any distortions since it will not affect marginal production. That result holds because the intersection of the demand curve and the supply + tax curve at z is characterized by a quantity (Q^t) that is greater than the market restricted quota (Q^r). In an otherwise competitive market, such a tax would cause distortions that lead to a reduction in output from Q^* to Q^t , and a deadweight loss equal to $z-y-c$. However, in the already constrained market, the addition of a moderately sized tax will not change the market price, the quantity produced, or the deadweight loss ($a-b-c$).

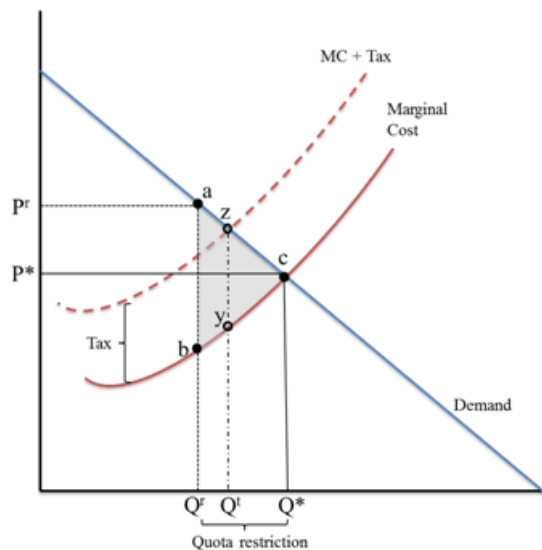


Figure 1. Effect of a gambling license tax in a market with quotas

¹ The oddly phrased “first-best taxation” is written as such since it is a corollary to “second-best taxation” without lump-sum transfers

However, if a gross gaming revenue (GGR) tax is employed, the result is different. The issue with using an ad valorem GGR tax in a market with quotas is that a firm with monopoly power will already be setting their supply at a level below the competitive equilibrium (the monopoly price/quantity). The addition of an ad valorem tax will then cause the operator's per unit costs to increase, causing further distortions, rather than serving as a pseudo lump-sum tax that transfers the monopoly rents to the government. To demonstrate this effect on individual operators' behavior, a given firm's marginal cost/revenue curves are illustrated in Figure 2. As these firms have some market power due to the license restrictions, they will produce where marginal revenue from the residual demand curve equals marginal cost, q^m . The GGR tax increases the operator's cost of production and causes output to fall from q^m to q^{m+t} . A lump-sum tax could have generated tax revenue equal to p^m -e-f-b (such as through a gaming license equal to that amount), but the GGR tax reduced output and reduced the tax revenue to p^t -c-d-a. GGR taxes can therefore create even greater dead weight losses than already exist in a market with monopoly power.

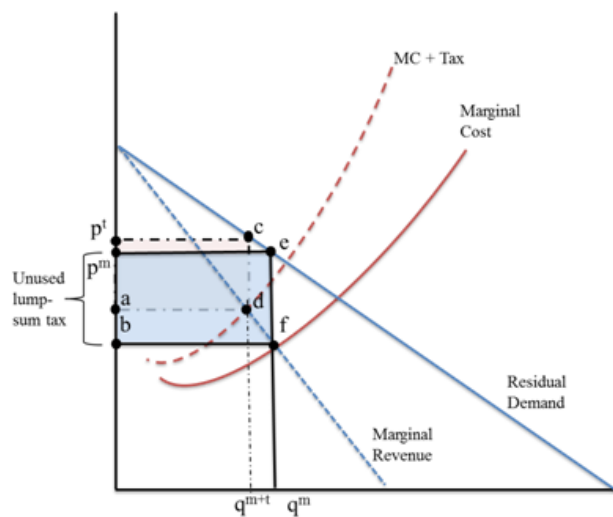


Figure 2. Effect of a gross gaming revenue tax on a firm with market power

Philander (2013) expands this gambling monopoly model to a market with two consumer types, price sensitive recreational gamblers and price insensitive problem gamblers. He shows that in a market where supply is restricted to a single local monopolist, consumers will generally prefer specific taxation while the monopolist would prefer ad valorem taxation. Under specific taxation, a revenue maximizing government will tend to employ a lump-sum tax on the producer that is equal to his entire monopoly profits – effectively transferring all rents from the producer, whereas under an ad valorem tax, the monopolist will still retain some economic rents due to the imperfect tax mechanism. With a lump-sum tax, consumers obtain a higher provision of government funded public goods than under ad valorem taxes, and also incur the same level of consumption as under no taxation. Under an ad valorem tax, recreational gamblers are noted to have their (no taxation) consumption levels distorted more than problem gamblers, because of the fact that problem gamblers are the least sensitive to price. Recreational gamblers consumption levels are therefore disproportionately reduced relative to problem gamblers, leaving a higher share of problem gamblers in the market to fund the tax. This inequity of incidence provides another reason to use license based taxes, rather than taxes on gross gaming revenue.

In the absence of an ability to use lump-sum taxes, the optimal commodity tax structure is provided by Ramsey (1927). Ramsey finds that commodity taxes should be

based on the relative sensitivity of demand to changes in price (demand elasticity) and on the effect that consumption of the commodity has on demand in other markets. That is, goods whose demand will respond least to a change in price should be taxed at a higher rate, since there will be fewer distortions in consumption, and where correlations exist among the demand for goods, the optimal policy becomes more complicated. The effect of commodity taxes on a given good must be balanced against the change in demand (and therefore commodity tax revenue) of other complimentary/substitutionary goods. For example, since casino gambling is strongly tied to the lodging and hospitality industries (e.g. Fenich and Hashimoto, 2004, 2005; Hashimoto and Fenich, 2003), a high tax on casino revenue may adversely affect tax revenue generated from hotels.

Given the results of Ramsey (1927), the theoretically correct tax policy in gambling is two-fold. First, since many gambling industries are situated well within the elastic portion of the demand curve, they may not be good candidates for further increases in tax rates. In a survey of over two-dozen studies, Forrest (2010) found the average value of gambling elasticities to be -1.57. Of course, this may partially be a function of already high taxes and monopolistic conditions in many markets. In any case, lotteries have generally been noted to be a more inelastic form of gambling (Swiss Institute of Comparative Law, 2006), and therefore the generally higher comparative tax rates for that form of gambling may be warranted (American Gaming Association, 2011; Calgagno, Walker, and Jackson, 2010; Tax Foundation, 2012).

Due to the second aspect of Ramsey tax design, normative policy is complicated by various gambling industries ties to one another (Walker, 2007a) and their ties to the overall tourism industry (Eadington & Doyle, 2009). For example, a lower casino gambling tax relative to the lottery tax may be supported by casinos' complementary effects on other taxable industries (such as tourism and hospitality). A high tax on casinos will reduce tax revenue collected from those other local industries, and this may be particularly noticeable for integrated-resort casinos that serve as greater tourism attractions. However, casinos have been noted to be a substitute to lottery gambling (Fink and Rork, 2003; Walker and Jackson, 2008). The lower casino tax to complement the tourism industry (and tourism based taxes) must therefore be balanced against the increased substitutionary effects on the more heavily taxed lottery industry. Similar arguments would apply to other forms of gambling based on their demand and cross-elasticities, and any comprehensive policy should make use of careful empirical modeling to balance these effects.

Externality Based Taxes

In the presence of externalities (a cost or benefit that is incurred by a third party of a transaction), optimal commodity tax design is no longer described by the Ramsey (1927) conditions. In particular, if consumption of a particular commodity leads to a negative externality, Pigou (1920) and Baumol (1972) suggest that those goods should be taxed at a higher rate. This "pigovian" tax should be equal in size to the negative externality caused by consumption. The purpose of this tax is to force the private market to "internalize" the social cost of the activity. If the benefit from producing the good is greater than both the cost of production and the cost of the pigovian tax, then it remains economically efficient for continued production.²

² In some cases, a tax greater than that described by Baumol (1972) may be appropriate. Tullock (1967) and Sandmo (1975) suggest that higher taxes may be desirable if those sin taxes are able to offset distortive taxes elsewhere in the economy, such as income taxes that reduce the incentive to work. This phenomenon has been described in the environmental economics literature as a double dividend (Pearce, 1991) since the tax both reduces the harmful externality and offsets distortions elsewhere. The double dividend is frequently cited as a reason to implement pollution based taxes, but can be challenging to effectively implement.

Since many social costs can be attributed to different forms of gambling, such as those noted by Walker (2007b), Collins and Lapsley (2003), and Eadington (1996, 2003),³ higher taxes in the gambling sector could be normatively valid if they are commensurate with the increase in external social costs. This does not mean that they are equal to the direct costs of a consumer with problem gambling issues, since gamblers would not be a “third party” in the transaction and can conceivably have control over their own costs (Guryan and Kearney, 2010; Mobilia, 1993; Narayanan and Manchanda, 2012). Rather, accounting of the externalities could include items such as the need for increased law enforcement or the psychic costs borne by the friends and family of problem gamblers.

Since that measure of externalities is effectively a function of the level of problem gambling, this tax theory implies that higher relative tax rates should be applied to those forms of gambling that have more problem gamblers, such as video lottery terminals or pokies (Abbott & Volberg, 2000; Australia Productivity Commission, 1999; Wiebe, Single, & Falkowski-Ham, 2001). It also suggests that incentives could be designed for the gambling industry, where the tax rate becomes a function of the problem gambling prevalence rate. Firms would then be able to make rational decisions around investments in responsible gambling programs.

Empirically, gambling taxes do not appear to follow any sort of pigovian objective. Chapman et al. (1997) found that the most socially harmful forms of gambling were not taxed at a higher rate in Australia. Taxes on pokies were fairly low, while the tax rate on less socially harmful lotteries was comparatively much higher. Similar comparative tax levels are illustrated in the U.S. by Clotfelter (2005). An important distinction to make with the casino gaming industry, as compared to most other “sin” goods or industries with negative externalities, is that casinos are often design to be an export good to other jurisdictions. As stated by Eadington (1999):

Historically, casinos have often been introduced to capture economic benefits from “exporting” casino gaming to customers from regions where the activity is prohibited. Jurisdictions that legalized casinos were often resource poor, or under economic duress. One or both of these factors apply to Monaco (1863), Nevada (1931), Macao (in the early 20th century), the Caribbean (1960s), and Atlantic City (1976). (p.186-187)

When a large portion of economic activity is in the form of exports, the home state is able to capture the economic rents from foreign visitors, while exporting many of the negative externalities when the visitors return home. This lowers the appropriate pigovian tax of the home state, since much of the externalities are no longer borne by the local economy. Destination resorts and other gambling facilities established near foreign populations should therefore be taxed less than facilities that primarily draw from domestic patrons.

Tax Incidence

Incidence is not a heavily discussed issue in tax theory, but public debates often tend to focus on the degree to which taxes generated by gambling are “regressive” – that is, whether low income residents tend to produce more gambling tax revenue as a share of income relative to high income residents. Much academic gambling research has also focused on this issue, finding that lotteries tend to be quite regressive (e.g. Daberkow and Lin, 2012; Ghent and Grant, 2010; Perez and Humphries, 2012), with casino gambling somewhat less so, but still regressive (e.g. Borg, Mason, and Shaprio, 1991; Rivenbark and Rounsaville, 1996; Worthington, 2001). Part of this difference may be explained by

³ Albeit the validity of many of the costs are in dispute

the limited opportunity for higher income players to engage in high denomination play in lotteries. A single lottery ticket purchase is the same price for a low income gambler as it is for a high income gambler. In a casino, a higher income gamblers can wager on high denomination slots while lower income gamblers can wager on "penny slots." Lotteries are also considered to be more likely to be "aspirational gambling." That is, gambling with the aspiration of reaching higher levels of wealth rather than as an entertainment-oriented activity. It would therefore be more likely to appeal to lower income gamblers than already high income gamblers. Eadington (1988) summarizes this perspective:

Lotteries which have low intrinsic entertainment value but very large prizes relative to the cost of participation are the ideal wealth motive gambles. Fixed odds games with even money pay-offs, on the other hand, are more likely to attract entertainment motivated players than wealth seekers.

The idea of tax regressivity often draws more attention from the public debates than from tax theorists because distributional effects are often ignored in the debates. A complete tax regressivity discussion should highlight the net effect of the tax, after public income is redistributed through government spending. For example, a regressive tax may actually have a net-progressive effect if the revenue is redistributed to low-income groups. For example, a lottery tax could be used to lower income tax rates for persons with low incomes or it could be used to fund public goods that are disproportionately used by lower income residents, such as the public school system.

Inter-Jurisdictional Competition

If a policy maker is able to effectively restrict competition from outside jurisdictions, then the normative analysis outlined above should serve as a useful guide for policymaking. However, if there is a presence (or threat) of competition from surrounding jurisdictions, then the appropriate tax policy may change. Consider for example two casinos, each located on separate sides of the same border and each conforming to different government policies.⁴ If casino A is subject to a higher tax rate than casino B, then it will be at a distinct disadvantage due to its higher operating costs. The reduction in profitability could be manifested through high prices (lower return to player), or a reduction in the quality of the product (e.g. fewer amenities, less capital investments, fewer rewards, etc.), but all will lead to lower output and profitability. While casino A may still be able to generate a positive return if the market is under-supplied (and thus producing some economic rents), a less restricted market would ultimately lead to the collapse of the gambling market in state A, since any operator would prefer to provide its product under state B's lower cost regime.

This model may explain the lack of sites that are actually located within the United Kingdom – where applicable taxes include a 15% GGR tax (Beem & Mikler, 2011; Humphreys & Perez, 2012), and the large agglomeration of Internet gambling sites that serve UK residents from offshore tax havens. Similarly, the external competition qualification can explain the interest of so many firms in the U.S. online gambling market, despite the expectation of higher tax rates than in offshore tax havens. The Unlawful Internet Gambling Enforcement Act and the events of Black Friday have demonstrated the ability of the U.S. government to effectively restrict participation from unlicensed offshore operators (Rose, 2009, 2011). The U.S. has created effective barriers via difficult financial transaction mechanisms and higher account deposit loss risk. Even if future onshore operators will have to pass-through higher domestic tax rates, these barriers may be effective deterrents to competition from foreign sites.

⁴ This model is closely related to the linear city model describing the location of similar firms given consumers' preferences and travel costs (d'Aspremont, Gabszewicz, & Thisse, 1979; Hotelling, 1929)

Conclusion

This study provided a normative analysis of gambling tax policy using economic theory. Several key considerations for stakeholders of the industry were identified in order to maximize economic welfare. First, lump-sum taxation is generally preferred over ad valorem taxation, since it leads to fewer distortions in the economy from the competitive equilibrium. In this sense, the use of limited license fees to generate public revenue could be preferable to taxes on gross gaming revenue. This allows operators to profitably serve marginal consumers, since the tax has no effect on production incentives. This design could also yield a distributional benefit. A shift to license based taxes may lower the share of gambling revenue generated by problem gamblers.

Where gross gambling revenue taxes are used to generate public revenue, they should be inversely related to their elasticity. That is, products whose demand is sensitive to price changes should be taxed less, and products whose demand is less sensitive should be taxed more. Taxes on gambling activities should also be lower if they have complementary effects on other industries, and higher if they have substitutionary effects. This implies, for example, that casino taxes should be lower if they can serve as an attraction to the wider tourism and hospitality industries.

Not all ad valorem taxes are noted to be inefficient. A pigovian tax that is equal in size to the negative externalities caused by gambling is found to improve economic welfare. That is, by forcing the market to internalize the harm caused by the industry – typically called the social costs of gambling – both producers and consumers will be forced to pay the full costs of consumption, including those costs borne on the rest of society. Due to the perceived relationship between problem gamblers and external social costs, gambling industries that tend to have higher rates of problem gambling should be taxed at a higher relative rate. However, many casinos are designed to draw patrons from foreign jurisdictions, and therefore would warrant lower pigovian tax rates since the externalities are not incurred by the local economy.

While empirical studies have repeatedly shown gambling to have a regressive tax incidence, analysis and discussions of tax incidence should not be made without full consideration of the net tax effects. Market structure and the distributional choices with the tax revenue can turn a regressive tax into a progressive tax. Of course, the effectiveness of earmarking revenue from gambling sources must also be considered.

Finally, appropriate tax policy decisions should not be made in a domestic vacuum. The presence of foreign suppliers can cause the domestic market to collapse if there are significant tax advantages to locating in the foreign jurisdiction. However, if the overall market has supply limits and/or the home state is able to establish effective barriers to competition, then a difference in tax rates may be sustainable.

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