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The Nexus Between Gambling Tax and Gross Domestic Product in Kenya

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Abstract

This study seeks to assess the relationship between GDP and the tax rates imposed on each sub-sector, i.e., betting tax, lottery tax, gaming tax and prize competition tax. The target population for this study includes all licensed gambling operators in Kenya. Secondary data was obtained via request from the relevant authorities in Kenya. Regression analysis was performed on the data to model the relationship between the variables. It was found that an increase in the monetary amount of gambling taxes levied from winners and gamers would likely lead to a decrease in GDP, whereas the same increase in the monetary amount of gambling taxes levied from winning lottery players and monetary prize winners would likely lead to an increase in GDP. The study recommends that a moderate gambling tax regime should be imposed on all other operators except lotteries. The tax rates for lottery winnings and prize competition winnings should be increased, whereas the tax rates for betting winnings should be decreased.

1. Introduction

Gambling can be defined as placing something of value at risk in the hope of gaining something of greater value (Potenza, Fiellin, Heninger, Rounsaville, & Mazure, 2002). Another definition is playing a game for money or property. In order for an activity to be considered as gambling, three elements have to be present – risk, consideration and reward. The legalized gambling industry can be broken down into four major sub-sectors: betting, lottery, gaming and prize competitions. Globally, gambling has existed for millennia. Previous studies suggest that it dates back to the Paleolithic period, before written history. In China, gambling houses were widespread, and betting on fighting animals was common in the first millennium BC. Traditional forms of gambling include casino games, lotteries, horse and dog racing, card games and betting on sporting events.

Today, gambling is a major commercial activity both locally and internationally, contributing significantly to the global economy. Research and Markets, a Dublin-based market research company, estimates that by 2022, the global gambling market could be worth US$ 635 billion. It is therefore important to tax it effectively and efficiently.

However, this is complicated by the advancement of technology and its impact on the sociability of gambling. Technology has always played a role in the development of gambling practices and will continue to play a critical role in the development of increased gambling opportunities, e.g., online gambling (Griffiths, 1999). Gambling has numerous benefits, all of which have a positive effect on gross domestic product (GDP). These benefits include: (a) it is a diverse industry which creates many, well-paid employment opportunities, which contribute to the per capita income; (b) the gambling business has high profit margins, which translates to increased tax revenues for governments; (c) it attracts huge foreign investments; (d) studies show that, unlike most industries, it is resilient to the effects of economic recession, i.e., its demand is not often significantly affected by drastic changes in the economy; and (e) it complements other sectors, e.g., entertainment, hospitality and transport. Thus, taking into account the multiplier effect, gambling expenditure can be magnified because it has positive spillover effects on other industries.

On the other hand, gambling also has numerous costs, all of which have a negative effect on GDP. These costs mostly stem from gambling addiction, which is also known as pathological or problem gambling. This addiction often leads to loss of productivity in the workplace and the consequent loss of employment. This, in turn, causes bankruptcy and debt, an increase in the cost of credit throughout the economy, increased dependence on unemployment benefits, crime, destruction of families, mental illnesses such as depression and anxiety, which could lead to suicide; and thereafter, costly (usually government-funded) medical treatment for the various illnesses and rehabilitation of gambling addicts. Moreover, the profitability of gambling often attracts illegal actors into the business. These costs are the main causes of the controversy and debate that pervade the legalization and morality of gambling globally. Gambling is generally perceived as an activity which may give rise to serious negative social consequences, such as the proliferation of problem gambling or the expansion of gambling-related crime (Lycka, 2011). The pressing problem for studies on gambling is to understand the political economy of gambling and its societal consequences, an agenda beyond the routine psychological approaches that dominate the field (Young, 2013).

Gambling is among a small group of sectors that are 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 higher rates than those of typical businesses. These tax policies are often applied inconsistently across jurisdictions (Christiansen, 2005). Evidently, there is no universal way in which to tax the gambling industry.

Different jurisdictions use different measures of regulation, and tax rates range from very low, single-digit percentages in countries, such as Cambodia and Singapore, to very high, double-digit percentages, which could rise up to 80% (e.g., in Luxembourg) depending on a particular taxpayer's winnings. Some jurisdictions only impose taxes on the gambling vendors' earnings, while others impose taxes on both the vendors and the consumers. State receipts from gambling, regardless of the details of how they are collected, are economically identical to any other form of excise tax (Suits, 1979). However, unlike excisable goods – which governments can effectively regulate by simply increasing taxes – previous studies have found that gambling has a regressive tax incidence. There is evidence that gambling's taxation implications (against income) are doubly regressive, taking disproportionately from lower income groups and giving to those who are better off (Pickernell, Brown, Worthington, & Crawford, 2004).

In Kenya, gambling on a national scale is said to have been officially launched in the mid-1960s, right after Kenya gained independence, in the form of The Kenya Charity Sweepstake – a lottery company which is still functional to date. It is regulated using the Betting, Lotteries and Gaming Act of 1966. Over the years, gambling has grown relatively slowly, but steadily nonetheless, with lotteries, casinos and prize competitions becoming considerably more popular. The past decade, however, has seen the sudden, rapid emergence and subsequent boom of gambling activities, particularly online sports betting. Based on a 2018 GeoPoll survey, Kenya had the highest number of young gamblers in sub-Saharan Africa, with sports betting being the most popular gambling activity.

The survey also found that the majority of Kenyan punters were between the ages of 18 years and 35 years, with most spending up to US$ 50 a month on sports betting. This is backed up by data which was tabled before parliament (the Labour and Social Welfare Committee) in February 2017, which showed that in the 2014/2015 and 2015/2016 fiscal years, the Kenya Revenue Authority (KRA) collected a grand total of KSh 4.7 billion from just eight of the 25 licensed companies (at the time) in the betting sub-sector alone. Gambling among the youth is a formidable social problem that draws on those who can least afford it. It is partly due to a general disempowerment from society and, as a consequence, is connected with risk-taking behaviors, such as drug and alcohol abuse (Schissel, 2001).

While being popular and potentially lucrative, gambling can also be addictive and detrimental to society. Therefore, government intervention is not only necessary, but essential to levy the maximum revenue possible and reduce gambling's appeal to taxpayers to discourage them from partaking in it. This is the primary challenge which presents itself to any policymaker in this field: to strike a balance between the necessary protection of the public from excessive gambling and people's right to gratify their playing needs in a safe gaming environment (Lycka, 2011).

The main purposes of taxation are to raise revenue, ensure economic stability, protect local industries from foreign competition, promote social welfare, and ensure that there is fair distribution of income. The sudden and rapid emergence of online gambling in Kenya in the mid-2010s rendered the pre-existing legislation somewhat ambiguous and mostly obsolete. Therefore, the government proposed a 35% tax rate on all gambling activities, effective from January 1, 2018, through the Finance Bill 2017. Although this was a lot less than the initially rumored rate of 50%, it caused a lot of back and forth between industry players, i.e., companies and the government, with betting companies terming the new law as draconian and excessively punitive and even going to court to challenge it.

This is because the firms are liable to pay several other taxes to the government. These taxes include licensing fees, property tax, corporate income tax of 30%, and goods/services taxes, with lotteries also obligated to dedicate at least 25% of their gross proceeds to social causes. If consumption of a particular commodity leads to a negative externality, that commodity should be taxed at a higher rate, equal in size to the negative externality caused by the consumption (Pigou, 1920). This is known as a Pigouvian tax. The purpose of this tax is to force the private market to absorb the social cost of the activity. However, high taxes in the gambling sector do not mean that they are equal to the direct costs of a consumer with gambling problems, since gamblers are not a 'third party' in the transaction and they can conceivably have control over their own costs (Guryan & Kearney, 2010).

The high rate proved difficult to implement and was detrimental to the industry; thus, the rate was reduced to 15% via an amendment to the Finance Bill 2018. The definition of punters' winnings was expanded to include all sub-sectors, as opposed to bookmakers only, thus closing a major loophole. The Bill also made gross winnings, as opposed to net winnings, subject to the withholding tax of 20%. However, it is not clear on how non-cash gambling rewards are taxed. Punters are also charged excise taxes when transferring money from their mobile money transfer accounts to their betting wallets. At present, significant uncertainty remains regarding the best tax regime, i.e., a tax base and tax rates that ensure that both the gambling industry and GDP grow simultaneously and optimally.

The government can increase gambling revenues by expanding the tax base rather than raising tax rates (Smith, 2000). On the face of it, imposing high tax rates would lead to an increase in revenue collected and thus contribute to an increase in GDP. It would also ensure that the gambling industry is better regulated. However, this would also lead to a decrease in the earnings of gambling companies, thus lowering their ceiling in terms of growth. Also, numerous employees would have to lose their jobs for gambling companies to maintain good profitability. Potential local and foreign investors in the gambling sector would be reluctant to put their money in a tax jurisdiction where they perceive the rate as being punitive and too high for their liking. It would also drive the already operational industry players out of the country and into more tax-friendly jurisdictions. Firms with online gambling platforms could also focus their business on foreign gamblers residing in favorable tax jurisdictions, i.e., offshore gambling, thus leaving the government with subdued tax revenues. The presence of foreign suppliers could cause the domestic market to collapse if there are significant tax advantages to relocating to foreign jurisdictions.

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 (Philander., 2013). The tax rate on gaming revenues is very important, but a jurisdiction should not be evaluated on the tax rate or total taxes alone without looking at other relevant factors, such as competition (Prum & Bybee, 1999). It can also be argued that a high tax rate would lead to a rise in deleterious activity within the gambling sector because it is virtually impossible to operate lawfully and remain profitable. An underground economy, ranging from the biggest companies to the smallest operators within the sector, would emerge and tax evasion would skyrocket. Companies would create resentment against authorities who impose high levies that are too high and tax systems that are too complex. It would also accelerate tax avoidance schemes.

In addition, because of the complexity of the system, the companies often need to rely on external tax professionals who can minimize tax payments by means of sophisticated tax avoidance schemes (Franzoni, 1998). Therefore, one can argue that imposing high taxes is counterproductive. Though legislation is a necessary regulator for the protection of the business environment and security of the economic agents, for establishment of the necessary social security regulations, they may also hamper compliance and the growth of business through additional expenditures and administrative obstacles (Williams & Round, 2009).

Due to the aforementioned taxes that they are obligated to pay, and due to their immense involvement in social activities via sponsorships, gambling companies and vendors feel like they are overtaxed and they have to rely on the sheer volume of customers to remain sustainably profitable. Betting operators, such as SportPesa, have greatly impacted people's lives by providing employment opportunities and contributing to society as a whole through their sponsorship of local sports and corporate social responsibility (CSR) activities.

They have invested hundreds of millions of KSh in Kenyan sports. For instance, when the government imposed a tax rate of 35% on all gambling activities in January 2018, SportPesa withdrew a sports sponsorship worth KSh 600 million, which left local football, rugby, boxing and rallying in a state of financial turmoil. The company later returned in April 2018, but only to sponsor football with significantly less financial commitment, citing the high tax rate as the reason, because sponsoring the other aforementioned sports was unsustainable. In 2019, the KRA reported that it was owed more than KSh 26 billion by 27 betting firms, with SportPesa owing

more than half of this amount. It was also reported that some firms had been operating under normal business permits and had been understating their earnings throughout their existence in Kenya, thus paying a fraction of the tax due. Consequently, the government ordered all betting firms to apply for operating licenses afresh from July 1, 2019.

The Betting Control and Licensing Board (BCLB) banned celebrities from endorsing gambling companies via roadshows, rallies, print, and audio-visual media. Two of the biggest players in the betting industry, which operate under the brand names SportPesa and Betin, had their licenses suspended in July 2019, and they shut down their operations in Kenya soon after. This led to an estimated 2,500 job losses, and it also took a huge toll on local sports.

For the tax system to be efficient and effective, tax policy needs to favor the taxpayers. It should be designed such that the tax rates are fair and rational (Thiga & Muturi, 2015). In order to appease both the government and the industry players, it would seem that imposing moderate tax rates would be the best way to solve this issue. Moderate taxes levied would presumptively neither stifle the growth of the industry nor repel potential investors (domestic and/or foreign).

Tax evasion and illegal gambling activities would not be as rampant as they would be under a high tax rate regime. This may appear ideal from the outside looking in; however, it may not be an optimal solution as it would mean subdued revenue for the government from a sector that generates income by providing potentially harmful services to the populace. In its efforts to effectively and efficiently regulate the gambling industry using policy formulation and implementation, the government – via the BCLB along with the Exchequer – seeks to achieve a consensus on the aforementioned tax issues affecting the gambling industry in Kenya. This is therefore an area which warrants in-depth research.

1.1. Statement of the Problem

This study attempts to find a solution to the ongoing dispute between the government and gambling operators over the taxation of gambling activities in Kenya. Since online sports betting rose to unprecedented levels of popularity in the country in the mid-2010s, the government has endeavored to amend the pre-existing legislation to better regulate the gambling sector due to the previously discussed dangers that gambling poses to its citizenry and to the national economy by extension. In the period between 2014 and 2017, gambling was taxed at a rate of 7.5% for betting, 5% for lotteries, 12% for gaming, and 15% for prize competitions on gross revenue/turnover. Thereafter, those rates were raised to 35% for all sub-sectors in January 2018, causing immense pushback from industry players.

Then, as discussed in section 1.1.3 of this study, in September 2018, the Finance Bill 2018 was amended to reduce all gambling tax rates from 35% to 15% while expanding the definition of winnings to impose a 20% tax rate on punters' gross winnings across all gambling sub-sectors. Additionally, indirect taxes on gambling transactions were introduced, i.e., a 15% tax rate on internet and data services, a 16% excise tax rate on cellular money transfers, and a 20% tax rate on bank fees for money transfers. All throughout that period, GDP grew and shrank at different rates from quarter to quarter. Therefore, assessing the relationship between gambling tax and GDP was useful as it shed some new light on the matter.

As alluded to in section 1.1 of this study, due to the various inherent social, political and economic differences that exist from jurisdiction to jurisdiction all over the world, there is no universal way in which to tax gambling. Low, moderate and high tax rates each have their merits and demerits.

Therefore, there is great difficulty in determining the most efficient way to tax gambling, which would ideally include: (a) implementing a tax regime that ensures that operators pay their fair share of gambling taxes but also allows the industry to thrive and flourish, (b) imposing regulations in a manner which protects members of the general public from the adverse, socio-economic effects involved but also honors their rights to fulfill their betting/gaming wants, and (c) achieving (a) and (b) while ensuring that gambling activities contribute to GDP growth. Determining and implementing the optimal gambling tax rates is therefore crucial for the regulation of the gambling sector.

Kenya's current development blueprint for pursuing rapid, steady and sustained GDP growth (about 10% annually) is known as the Kenya Vision 2030. It aims to transform Kenya into a newly industrializing, middle-income country, and it is based on three pillars – the economic pillar, the social pillar and the political pillar. Information technology-enabled services and sports and social welfare programs are targeted for growth in the economic and social pillars. According to the Finance Bill 2018, all gambling taxes paid and 16% of the excise duty paid in respect of money transferred by cellular phone service providers – which is the most common method of payment for gambling – are allocated to The Sports, Arts and Social Development Fund, established under the Public Finance Management Act 2012 to support social development, including universal healthcare. All this, in addition to the great marketability and profitability of online gambling, the hefty investments in and sponsorships of numerous sports, and the numerous charitable donations made by gambling companies could indicate that the growth of the gambling industry will contribute significantly toward the achievement of the Kenya Vision 2030.

The aforementioned amendment made Kenya one of the few countries globally to adopt a hybrid model of taxing the gambling industry, i.e., the government simultaneously taxes the gambling operators and the punters, thus ensuring that the tax burden is shared between both parties. Moreover, in an attempt to reduce the appeal

of gambling to the masses, winning punters are not allowed to offset any gambling losses against their winnings. The government forecast the new tax regime to generate KSh 30 billion per year in revenue. However, with the popularity of online gambling, there is a possibility that gambling companies and vendors could change their operating models and delivery channels by moving their bases to low tax jurisdictions, such that they continue servicing the Kenyan market while effectively bypassing taxes through various online payment options, such as Visa Card, MasterCard and PayPal, which would be to the detriment of GDP.

The ambiguity of the current situation and questionable effectiveness of current policies make it difficult for gambling operators, treatment providers, players and other stakeholders to formulate appropriate responses to online gambling (Gainsbury & Wood, 2011). Previous studies conducted on gambling have focused on: (a) traditional brick and mortar gambling as opposed to online gambling, (b) the tax incidence of gambling, (c) consumer demand in the gambling sector, and (d) the socio-economic effects of gambling on the populace. Therefore, some gaps exist, which this study attempts to bridge.

1.2. Research Objectives
The main objective is to assess the relationship between gambling tax and GDP in Kenya.
Specific objectives:
(i)   To assess the relationship between betting tax and GDP in Kenya.
(ii)   To evaluate the relationship between lottery tax and GDP in Kenya.
(iii)   To examine the relationship between gaming tax and GDP in Kenya.
(iv)   To evaluate the relationship between prize competition tax and GDP in Kenya.

This was focuses on legalized gambling, i.e., the four sub-sectors of the gambling industry in Kenya, namely betting, lottery, gaming and prize competitions. Data collected from July 1, 2014, to June 30, 2019, was used to analyze the relationship between gambling tax and GDP over that time period. The study was conducted in the city of Nairobi and its outskirts over a five-month period between December 2021 and May 2022. The target population consisted of licensed betting companies (bookmakers), public lotteries, public gaming vendors and prize competitions.

2. Literature
2.1. Theory of Demand for Gambles
The theory of demand for gambles was put forth by Nyman (2004) and is based on the premise that a gamble enables the consumer to obtain "something for nothing". It is based on two fundamental concepts in economics: firstly, that additional income increases utility, but at a diminishing rate, and secondly, that economic resources are scarce; therefore, for the typical consumer, additional income is normally costly to obtain. This theory has a predictive component which suggests that the demand for gambles will tend to be greater among those for whom additional income is more costly to obtain, i.e., lower income earners. This is because the cost in terms of leisure foregone to obtain additional income is greater for low income earners than it is for high income earners; therefore, leisure savings are greater for low income earners if the additional income is obtained through a gamble.

The aforementioned prediction is consistent with studies that have found that low income households spend a greater proportion of their income on state lotteries than middle and/or high income households. This theory also predicts that workers who dislike their jobs or who greatly value their leisure time would be more likely to gamble than those for whom income and leisure are closer substitutes. This suggests that blue-collar workers are more likely to gamble than white-collar workers, wages held constant. This is consistent with the prediction that those for whom obtaining additional income is especially difficult, e.g., those who are discriminated against in the labor market, or those who have difficulty finding employment, are more likely to gamble. This is consistent with studies that have found that the demand for gambles increases with the size of the monetary reward (Kearney, 2004) and that have found that lotteries and raffles are by far the most popular forms of gambling (Welte, Barnes, Wieczorek, Tidwell, & Parker, 2004). Thus, the motivation to gamble not only involves the utility gained from the winnings, but also the utility costs that are saved by not having to work to earn them.

The theory suggests that economically vulnerable populations are more likely to engage in recreational gambling and that the use of lotteries and gambling taxes to raise government revenues will be disproportionately borne by those who are disadvantaged and vulnerable in the labor market. Nyman, Welte, and Dowd (2008) tested this theory using the 1999–2000 Survey of Gambling in the US. Welte, Barnes, Wieczorek, Tidwell, and Parker (2002) found that recreational gambling was more prevalent among non-whites who engaged in service occupations and lived in a census block group with a higher percentage of unemployment, as predicted by the theory. Ariyabuddhiphongs (2011) conducted a review of this theory and also found it to be true. This theory is relevant to this study because it aids in understanding the demand for gambling by the general public based on demographic composition, e.g., age, gender, level of education, and economic status, i.e., low income earners, middle-class and upper-class. It also predicts that the use of gambling taxes to raise government revenues will be disproportionately borne by those who are disadvantaged and

vulnerable in the labor market. This is helpful in trying to formulate a gambling tax regime which is effective, fair and does not oppress the lower class.

2.2. Cognitive Theory of Gambling

The cognitive theory of gambling (Rogers, 1998) emphasizes gamblers' irrational beliefs at the different stages of their activities. The main irrational beliefs are gamblers' fallacy, i.e., the probability of a number being drawn again is lower after it has already been drawn (Clotfelter & Cook, 1993); entrapment, i.e., decision makers' increasing commitment to a previously chosen course of action when they are personally responsible for the previous decision's negative outcome (Staw, 1976); belief in hot and cold numbers, i.e., hot numbers refer to the numbers that are seen to be drawn regularly, whereas cold numbers refer to the numbers that have been seldom drawn in recent games (Rogers, 1998); unrealistic optimism or perceived luckiness; superstitious beliefs; illusion of control, i.e., the lottery gamblers' tendency to believe that the tickets they have selected have a higher probability of winning than other tickets such that they would not trade or sell their tickets (Ladouceur, Mayrand, & Tourigny, 1987; Langer, 1975); the near miss and rollover effect, i.e. the effect on gamblers when the amounts of the unclaimed jackpot prizes of the previous draws are added to the following draw (Rogers, 1998). An analysis of the aforementioned irrational beliefs revealed a common basic denominator: the gamblers' inability or unwillingness to apply the principle of independence of each event or game. Gamblers continue to take into account past outcomes before predicting or placing the next bet, and one explanation for this is that the temporal and physical proximity of the gambling outcomes may induce the perception of interdependence (Ladouceur & Walker, 1996; Ladouceur & Walker, 1998).

Griffiths and Wood (2001) examined the major factors in the psychology of lottery gambling and found that success is due to a number of simple and interrelated factors, such as the aforementioned beliefs, thus supporting the theory. Ariyabuddhiphongs (2011) conducted an exhaustive review of this theory using demographic variables, such as age, gender and education levels, in the US, Thailand and the UK, and found that it is valid. Moreover, theoretical frameworks other than those of cognitive theories, e.g., social cognitive theory and theory of planned behavior, have been introduced in lottery gambling research. Personality dimensions have also been found to relate to lottery gambling. This theory is relevant to this study as it aids in understanding the psychology of gamblers and how their predictable behavior can be useful in predicting spending habits and their socioeconomic impact. This information is helpful to industry players, policymakers and researchers in trying to determine the best solution for the problem at hand.

2.3. Theory of Judgment Under Uncertainty

Theory of judgment under uncertainty (Tversky & Kahneman, 1974) explains lottery participation in terms of the gamblers' perceptions of patterns of numbers and the probability of winning. Under this theory, lottery gamblers employ different heuristics or mental operations to select their lottery numbers. These heuristics include representativeness, i.e., the tendency to judge the probability of an event based on its similarity to a parent population; anchoring and adjustment, i.e., the estimates people make depend on the initial values and the adjustments that they make to arrive at the final estimates; and framing of decisions, i.e., decision makers' choice to view problems in positive rather than negative terms. Nearly three decades of psychological research on judgment under uncertainty has demonstrated convincingly that intuitive judgments of probability systematically violate the calculus of chance (Fox, 1999).

Several biases, such as perpetual errors and illusions, to which the above judgments are susceptible, are also demonstrated. Tversky and Kahneman (1974) concluded that a better understanding of these heuristics and of the biases to which they lead could improve judgments and decisions in situations of uncertainty. Tversky and Kahneman (1986) assessed the aforementioned heuristics and biases and found that the subjective assessment of probability resembles the subjective assessment of physical quantities, such as distance or size, thus leading to systematic errors.

Gigerenzer and Murray (1987) and Gigerenzer (1991) argued that it may be inappropriate to characterize some the aforementioned biases as "errors" or "fallacies" and that the existence and nature of norms appropriate for single-case judgments have been dogmatically assumed by the heuristics and biases approach. Vranas (2000) reviewed Gigerenzer's critique of the heuristics and biases approach and argued that single-case probabilities make sense as they are governed by probabilistic norms, and the existence of conflicting statistical norms may be less widespread and less damaging than Gigerenzer suggests. Moutier and Houdé (2003) tested their hypothesis on judgment under uncertainty and conjunction fallacy inhibition training using this theory and found that subjects traditionally labeled as "irrational" with respect to the classical rules of inductive reasoning are in fact "inefficient inhibitors". Moreover, it continues to be a theory of choice in lottery gaming research to date. This theory is relevant to this study because it aids in studying how gamblers perceive lottery and casino games and the types of games that appeal to them the most. It also provides insight into the decision-making of the punters. Figure 1 below illustrates the conceptual framework.
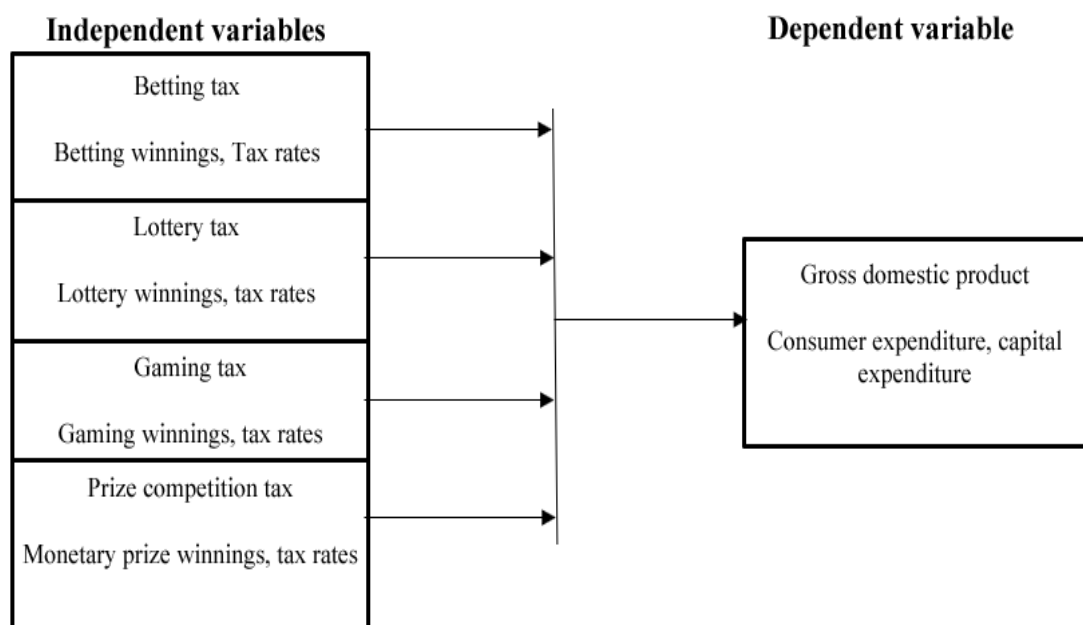
Figure 1. Conceptual framework.

2.4. Betting Tax

A betting transaction includes the collection or payment of winnings on a bet and any transaction in which one or more of the parties is acting as a bookmaker. There is a tax, known as the betting tax chargeable, at the rate of 15% of the gaming revenue. This variable is measurable at the ratio level. Sports betting is very popular in Kenya as evidenced by the success of betting platforms, such as SportPesa, 1XBET Kenya, mCHEZA, Betin, Betika, BetYetu and MozzartBet Kenya. Betting can be conducted in person, online or via text messaging. Internet gambling presents substantial new challenges to governments and regulatory agencies. Existing approaches to betting, lotteries and gaming are limited by the nature of internet technology and the international nature of the activity (Clarke & Dempsey, 2001).

Before the government passed the 35% tax rate in January 2018, betting was taxed at 7.5%. Betting is commonly thought to be a perfect subject for tax either on sumptuary grounds or on the agnostic principle of *pecunia non olet*, which means "money doesn't stink" i.e., money is money, regardless of how it was obtained. But as an administrative operation, ad valorem taxes on transactions require highly effective systems of accounting control, and the taxation of betting transactions presents specific difficulties. This is because the commodity is intangible, the contract is legally unenforceable, and there are no well-defined wholesale or manufacturing enterprises apart from the retail units, so the accountability for tax has to fall upon the latter (Hood, 1972).

2.5. Lottery Tax

Lotteries include sweepstakes, raffles, and any scheme involving the sale, gifting, disposal or distribution of property that is determined by chance, whether by the casting of dice, the purchase of tickets, cards, lots, numbers or figures, spinning a wheel, or otherwise. This variable is measurable at the ratio level. Before 2018, lottery was taxed at 5%; but with the obligation to donate 25% of sales revenue to charitable purposes, to support sports or games, or cultural activities. Popular lotteries in Kenya include Lotto Kenya, Pambazuka National Lottery, and the Kenya Charity Sweepstakes.

Lottery taxes impact alternative state revenue. On implementation, virtually all taxes have implications for the remainder of the tax structure. Lottery taxes are no exception. When a consumer purchases a lottery ticket for one dollar, that is one dollar less that he or she will spend on alternative goods, pay in taxes, or save (Borg, Mason, & Shapiro, 1991). The relationship between lottery sales and per capita GDP is an inverted U: lottery sales increase simultaneously with increases in per capita GDP up to a point and then start to decrease (Kaizeler & Faustino, 2008).

2.6. Gaming Tax

This variable is measurable at the ratio level. The casino industry has been in existence in Kenya since around 1969 and it now contributes over KSh 300 million in taxes annually and employs more than 4000 people. Most countries with legalized gambling levy taxes on the revenue earned by casinos. Before the implementation of the current rate, gaming was taxed at 12%. This was later increased to 35% but did not last long.

Gaming taxes generally fall into three main categories: wagering taxes, fees, and/or admissions taxes (Ahlgren, Dalbor, & Singh, 2009). Gaming is a significant contributor to GDP. On average, casinos are perceived to be a positive catalyst for economic and tourism development. However, geographical proximity to casinos,

demographic characteristics, and the structure of the industry are all important determinants in the creation of these perceptions (Nichols, Giacopassi, & Stitt, 2002). It has been shown that the net effect of a gaming tax is more likely to be economically bad if less of the tax burden can be passed on to players who are tourists. A high tax can only be applied if most of the tax is borne by visitors, otherwise a low tax has to be adopted for efficiency purposes (Gu & Li, 2009).

Internet gaming has grown steadily over the years and presents substantial regulatory obstacles to the government. Online gaming is strong enough to rival traditional brick and mortar gaming. If the two industries are substitutes, they should be concerned about cannibalizing their own sales; if the industries are complements, they should explore how to leverage the benefits across the virtual and non-virtual gaming floor (Philander, 2011). Internet casinos have emerged as the newest form of gambling, and there is no indication that the number of sites offering gambling will decrease (Lantzer, 2002).

Various authors, scholars and researchers differ on what the best tax rate for gaming should be (high, moderate or low). Imposing taxes on unhealthy items and returning the proceeds to consumers can generally improve total social surplus. Such taxes counteract overconsumption by consumers with self-control problems, while at the same time they naturally redistribute income to consumers with no self-control problems, such taxes can even create Pareto improvements, by which one person or entity will benefit without another being harmed (O'Donoghue & Rabin, 2006). Since its small adverse effect can be easily absorbed by its induced economic growth, a low gaming tax will attract outside investment conducive to overall efficiency (Gu & Li, 2009). Casinos are only synonymous with economic development if they create a greater value for society (Garrett, 2004). Aronovitz (2002) argued that lawmakers should take the time to develop a public policy for gaming that incorporates provisions with meaning and purpose. A gaming tax, whether imposed on gambling players or operators, will have a pervasive impact on the entire economy (Gu & Li, 2009).

2.7. Prize Competition Tax

This is a tax chargeable on the cost of entry to a competition at the premium rate of 15% of the total gross turnover. This variable is measurable at the ratio level. Prize competitions are quite popular in Kenya. They consist of holiday promotions, e.g., Christmas, Easter or other public holiday promotions, which are mostly run by supermarket chains, such as Tuskys, Nakumatt and Khetia's. Other promotions are mostly run by media and telecommunication companies, such as Royal Media Services, Nation Media Group, and Safaricom. Popular prize competitions include Win a Trip, Shop and Win, Tazama Chapaa, Shukrani Kochokocho Kenya Nzima, and Jipange na Viusasa. Winnings could be in the form of cash, airplane/concert tickets, trips, or assets such as houses and cars. Current legislation is not clear on how non-monetary prizes should be taxed. Taxation understanding is necessary to increase public awareness of the role of tax in national development, especially in areas concerning taxation laws, and especially to explain how and where the money collected is spent by the government (Palil, 2010).

2.8. Empirical Review
2.8.1. Betting Tax

Koross (2016) investigated the prevalence of betting among university students, their motivation for betting, and the influence of betting on the students' behavior. The study was conducted on a sample of 100 randomly selected students in Kisii University, Eldoret Campus, Kenya, and it employed a survey research design. Data was collected using questionnaires and analyzed thereafter. The study found that the prevalence of betting was high among the respondents: 50% bet at least once a week, 28% bet at least once a fortnight, 12% bet at least once a month, 7% bet at least once within the three months prior to the study, and 3% was unclear. The study also found that money was the biggest motivator for betting, with 70% of the respondents indicating that the possibility of winning large sums of money was the main reason they place bets, 15% stated enjoyment, 10% stated boredom, and 5% stated all the aforementioned factors as their main motivators for betting. The study also found that betting has an influence on students' behavior, with 90% of respondents indicating that they often lose time from school due to betting, 80% indicated they often find themselves thinking about betting, 75% admitted that they had used their upkeep money or school fees to bet at least once, 92% stated that they have borrowed money or sold something finance betting, and 95% indicated that gambling has caused them to have difficulty sleeping.

Mwadime (2017) assessed the impact of sports betting on punters in Kenya. The study was conducted in 2016 and it adopted a descriptive research design using a quantitative research approach. Data from the BCLB indicated that in 2016 there were approximately two million individuals who engaged in sports betting activities in Kenya. Those individuals formed the population for the study. Using stratified random sampling and Yamane's formula, a sample size of 100 respondents distributed equally amongst the 10 licensed mobile betting platforms (at the time) was selected for the study. Questionnaires were used to collect data from the respondents. The study found that sports betting mostly affects men between the ages of 21 and 40 years. The study also found that these punters mostly use their salaries to place bets and they are more likely to fall into gambling addiction than any other demographic.

Paton, Siegel, and Vaughan Williams (2002) examined the economic rationale behind the decision of the UK government in 2001 to significantly reduce betting taxes and replace the general betting duty (GBD), which

is levied as a proportion of betting stakes, with a gross profits tax (GPT), which is based on the net revenue of bookmakers, in response to the e-commerce revolution. It also assessed the likely effects of the decision on tax revenue, the gambling industry, and consumers. The study employed an analytical research design and used secondary data from various surveys, reports and government records. They found that the government reduced betting taxes because the rise of internet betting resulted in a scenario where UK bookmakers had to compete in a global market with lower entry barriers and greater substitution possibilities, populated by firms which are subject to a much lower tax burden. It was also found that the switch from GBD to GPT is likely to bring significant efficiency gains and will, at worst, only have a neutral impact on allocative efficiency and welfare losses in the betting industry.

Vongsinsirikul (2010) assessed the characteristics, economic impact and the demand for gambling in Thailand. The study employed a survey research design. The tobit model was employed to measure gambling expenditure, and the logit model was used to estimate the effect of socioeconomic factors on the participation of gambling. Data was collected through questionnaire surveys, which were conducted in 2002, 2007 and 2008. The country was divided into two parts: Bangkok and its vicinities, and other provinces. The random provinces were from all parts of the country. The sample comprised 5,000 people divided into three regions: the first comprised 2,000 people living in Bangkok and its vicinities; the second comprised 1,500 people who resided inside the municipal area of the provinces; and the last group comprised 1,500 people who resided outside the municipal area of the provinces. The study found that number games, such as the government lottery and the underground lottery, are popular among older gamblers, whereas football betting is more popular among adolescents. The expenditure on number games was shown to be high in the group of gamblers who have undergraduate degrees or lower educational qualifications, while the expenditure on casino and football betting was high in the group of gamblers who have undergraduate degrees and higher educational qualifications. The study also found that a higher level of education leads to a lower level of gambling expenditure, and that males have a higher level of gambling expenditure than females.

Smith, Paton, and Williams (2006) examined market efficiency in person-to-person wagering on internet betting exchanges on horse racing in the UK in 2002. This study employed an empirical research design. The hypothesis that betting exchanges had brought about significant efficiency gains by lowering transaction costs for customers was tested using matched data on UK horse racing from betting exchanges and from traditional betting media. Shin's approach was used to calculate the bias for a sample of races. Bookmakers' prices for 799 horse races run in 2002 were gathered. Sample races were drawn from the second half of the 2001–2002 National Hunt season, the 2002 Flat season and the beginning of the 2002–2003 National Hunt season. Data on prices and betting exchanges was collected from the Racing Post's website, the major daily publication dealing with horse racing and gambling in the United Kingdom. The study found that, in contrast to traditional betting media, betting exchanges exhibit both weak- and strong-form market efficiencies. It also found evidence that an information-based model explains the well documented favorite-longshot bias more convincingly than traditional explanations based on risk preferences.

2.9. Lottery Tax

Heavey (1978) examined the incidence of state lottery taxes in Pennsylvania in the US. Data from the Pennsylvania State Lottery was used to estimate the relationships between lottery expenditure and income, age, race, education, and city of residence. The study employed an empirical research design. Names and addresses of all winners in the Pennsylvania lottery during a two-week sample period, from May 2–15, 1973, were obtained from the Bureau of State Lotteries. The hypotheses formulated were that, in absolute terms, lottery participation is negatively related to minority racial status and education, while in relative terms, lottery participation is negatively related to income. A multiple regression analysis was used to test the hypotheses. They concluded that middle-income people spend more money on lotteries than low-income people.

Borg, Mason, and Shapiro (1993) analyzed the impact of state lotteries on the tax revenues of the 23 states that had lotteries in 1987 in the US. The study found that although lotteries increased the total state revenue, the amount by which they did was far less than the revenue collected from the lottery games, i.e., the lottery states lost anywhere between seven cents and 23 cents from other sources of revenue for each dollar of lottery revenue they received; thus, lotteries as a source of state funding are neither efficient nor equitable substitutes for more traditional tax sources.

Wan (2010) examined whether setting up a lottery receipt system would reduce tax evasion in China. The study employed an empirical research design. Data was obtained from the Tianjin Statistics Bureau, Tianjin Tax Bureau, Beijing Statistics Bureau, Beijing Tax Bureau, Beijing Statistics Yearbook 1999–2004, Tianjin Statistics Yearbook 1999–2004, Beijing Public Finance Yearbook 2002–2004, and China Statistics Yearbook 1991–2005. A total of 37 districts in Beijing and Tianjin were captured in the data. The study found that when given a lottery receipt, consumers voluntarily and fully declared tax so that the sellers could not evade tax, and that the cost of tax evasion can be fully saved, while the auditing cost can be partially saved. Consequently, this raises the tax revenue; therefore, optimal taxation becomes practicable. Moreover, evidence based on individual data in the Chinese Household Survey 2006 supports the statement that lottery receipts promote consumers' tax declarations.

Clotfelter and Cook (1987) examined the incidence of the implicit tax that was levied by lottery agencies in the US, focusing on the dominant lottery games used in the 1980s. The study employed an empirical research design. Data was obtained from previously published information on the average household lottery expenditure by income class. The study found that the implicit tax was regressive in virtually all cases. It was also found that the implicit tax rate of about 40% on gross lottery purchases was too high, even in comparison to the excise tax rates on alcohol and tobacco.

Stranahan and Borg (1998) estimated whether lottery tax results in a differential tax burden by race, educational attainment, or age within households that have equal economic positions and whether lottery advertising intensifies any horizontal inequities that exist in the US. The study was conducted in three states – Florida, Virginia and Colorado. It employed a survey research design, estimating a probit model and a truncated tobit model in order to develop estimates of the expenditure on lottery products for the various groups of equals. Data was collected from telephone interview surveys conducted in each of the three states during September and October of 1991. Questionnaires were designed to gather information about lottery expenditures, household demographics, and the respondents' awareness of lottery advertisements. Survey respondents in the three states were chosen randomly from telephone books in a variety of cities and rural areas, geographically dispersed throughout each state. The survey technique was designed to provide a sample that included the same percentage of respondents from each type of area in each state, i.e., very large city, large city, small city, rural, and suburb. It was found that, among individuals with otherwise identical characteristics, African Americans bear a significantly higher lottery tax burden. Other minority groups and individuals with the lowest educational attainment also bear a larger lottery tax burden. The results suggest that the greatest impact of lottery advertising is on African Americans, thus intensifying the horizontal inequity of the lottery tax and resulting in a greater tax burden for African Americans compared to their Caucasian counterparts.

2.10. Gaming Tax

Ahlgren et al. (2009) analyzed the effect of the 2003 increase in gaming tax on gaming demand in the state of Illinois, US. On July 1, 2003, the gaming tax rate in Illinois was increased to 70% of the adjusted gross revenue. The study used a descriptive research design, focusing on the seven-year period between 2000 and 2006. It hypothesized that the tax increase would have a negative effect on gaming demand. Secondary data was compiled from the Illinois Gaming Board Monthly Revenue Reports, comprising of monthly commercial gaming information from January 2000 to December 2006. A multiple regression analysis was used to model the tax increase and to account for seasonality in the data. A Box–Jenkins autoregressive moving average model was employed to counteract the correlation of error terms. The study found that the 2003 Illinois tax restructure did indeed have a negative effect on gaming demand.

Gu and Li (2009) evaluated why various gaming markets adopt different tax rates in Asia and America. The study employed an empirical research design and used secondary data. It was found that market conditions, such as supply capacity and market size, have a clear bearing on tax division and overall welfare, and that a gaming tax is more likely to be economically bad if less of the tax burden can be passed on to tourist players. A high tax rate can only be applied if most of the tax is borne by visitors. Since its small adverse effect can be easily absorbed by its induced economic growth, a low gaming tax rate will attract outside investment conducive to overall efficiency.

Rivenbark (1998) sought to determine the tax incidence of casino gaming in the state of Mississippi in the US for the eight casino counties and the remaining non-casino counties, taking into account accessibility to casino play. The study employed a survey research design. Data was collected on April 23, 1995, and April 27, 1995, via a telephone survey, which produced 397 and 410 usable responses from casino counties and non-casino counties, respectively.

Rephann, Dalton, Stair, and Isserman (1997) examined the effects of casino gaming in the US and how various counties use it as an economic development strategy. This study used a quasi-experimental control group method to study 68 counties where casinos were open during the period from 1989 to 1993 and three multi-casino counties. Data was obtained from a casino tourism vacation guide for the United States of America, the Regional Economic Information System and the Uniform Crime Reports. The study found that casino gambling was adopted by counties that were struggling economically and that it can be a successful development strategy. It was also found that some casino types and locations were marginally better than others, but that these factors were not prominent determinants of casino effects at the time.

Philander (2011) estimated the effect of the online gaming industry on the commercial casino gaming industry in the US. The study employed a retrospective longitudinal research design, estimating two time-series regression models to determine the effect of online gaming revenue on brick and mortar gaming revenue. The study found that in the years prior to the implementation of the Unlawful Internet Gambling Enforcement Act 2006, online gaming was a moderate substitute for brick and mortar gaming in the US. During this early period in the online gaming market, which was characterized by loose regulation and relatively easy access, online gaming revenue is estimated to have cannibalized the commercial casino revenue at a rate of 27 to 30 cents to the dollar.

2.11. Prize Competition Tax

Petry et al. (2006) examined whether a prize-based contingency management intervention that provides drug-abstinent patients with a chance to win prizes of varying magnitudes is efficacious in retaining patients in treatment and reducing their drug use. The study was conducted in the US and employed a fundamental research design. A random sample of 803 outpatients was recruited from eight non-methadone and six methadone clinics. Interviews related to demographics and substance use were conducted on the participants. Gambling behaviors before, during and three months after participation in a multi-site study of contingency management were compared for stimulant users who were randomly assigned to 12 weeks of standard care for the 407 who were on prize-based contingency management or the 396 who were not on prize-based contingency management. Among the study participants enrolled in outpatient non-methadone drug abuse treatment, 26% reported gambling during the observation period; this rate was 37% among participants enrolled in methadone maintenance programs. No differences in gambling over time were noted between those assigned to the prize contingency management versus standard care conditions, indicating that this prize contingency management procedure does not adversely impact gambling behavior among stimulant abusers. Thus, the study found no increase in gambling as a result of exposure to prize-based contingency management.

Mealem and Nitzan (2014) examined the equity and effectiveness of optimal taxation in contests under an all-pay auction in Israel. The study employed a conceptual research design and used secondary data. The study found that, given a revenue-maximizing contest designer who faces a balanced budget constraint, the optimal taxation scheme corresponding to an all-pay auction is appealing in two senses: first, it ensures exceptional equitable final prize valuations, and second, it is effective; it yields total contestants' efforts that are larger than those obtained under almost any Tullock-type lottery. Furthermore, when a budget surplus is allowed, the superiority of optimal taxation under the all-pay auction is preserved in terms of equity and effectiveness relative to optimal taxation under any contest success function (CSF).

Mealem and Nitzan (2012) employed an empirical research design and used secondary data. The study found that a designer who maximizes efforts subject to a balanced budget constraint prefers dual discrimination, namely changing the contestants' prize valuations and bias of the impact of their efforts. Optimal two-fold discrimination is often superior to any single mode of discrimination under any competition. Surprisingly, in the general 'N-player' contest game, under the prototypical simple competition, it can yield the maximal possible efforts: the highest valuation of the contested prize. If a single mode of discrimination is allowed, then differential taxation is superior to structural discrimination.

3. Methodology

3.1. Research Design

This study employed a descriptive research design. Descriptive research includes surveys and fact-finding enquiries of different kinds. The main characteristic of this method is that the researcher has no control over the variables; he can only report what has happened or what is happening (Kothari, 2004). This study assessed the relationship between gambling tax and GDP using quantitative data which had already been recorded by various bodies in the country. Therefore, the researcher was unable to manipulate or influence the data in any way. Since the Kenyan fiscal year begins on July 1 of one calendar year and ends on June 30 of the following calendar year, this study analyzed data on the variables that were recorded for five fiscal years between July 1, 2014, and June 30, 2019. Therefore, the study utilized the retrospective longitudinal method – a correlational research technique which involves observing variables over an extended period of time. This technique aided the observation and subsequent analysis of the variations in the data over the period under study.

The independent variables as well as the dependent variable in this study are quantitative in nature and they were measured at the ratio level using various parameters. GDP was measured using consumer expenditure and capital expenditure, i.e., private business investment in the gambling sector. The combination of its characteristic summary and correlational statistics along with its focus on specific types of research questions, methods and outcomes is what distinguishes descriptive research from other research types. As discussed in section 2.4.3 of this study, Ahlgren et al. (2009) employed the descriptive research design to analyze the effect of the 2003 increase of gaming tax on gaming demand in the state of Illinois in the US.

3.2. Target Population

The target population for this study consists of all gambling operators that were licensed to conduct business in Kenya in the period between July 1, 2014, and June 30, 2019. In order to analyze all the relevant and necessary data for this study, a census inquiry was performed. A complete enumeration of all items in the 'population' is known as a census inquiry (Kothari, 2004). In order to achieve the highest accuracy possible, all of the betting companies, lotteries, gaming vendors and prize competitions that were licensed to conduct business in Kenya over the aforementioned period were studied. This is because the target population is relatively small and well defined. In addition, the elements of bias, error and/or chance which could possibly occur through sampling techniques were avoided.

3.3. Sampling Frame

This study was conducted on a total of 573 different gambling operators. The following table illustrates the total numbers according to data obtained from the BCLB of all of the different gambling companies and vendors that were licensed to conduct business in Kenya over the study period categorized into four major sub-sectors, i.e., betting, lottery, gaming, and prize competitions.

Table 1. Total number of gambling operators by sub-sector.

Sub-sector	Number of operators
Betting	90
Lottery	68
Gaming	80
Prize competitions	335
Total	573

3.4. Sample

This study focused on the 60-month period between July 1, 2014, and June 30, 2019. The popularity of gambling in Kenya rose to unprecedented levels during this period. This was largely caused by the increased affordability of internet access and mobile phone technology in the country, consequently leading to a boom in the industry. Moreover, betting and gaming tax rates were quite low before the government raised all gambling taxes drastically and later lowered them in similar fashion, all during that period, a situation which presented an opportunity to assess how the different tax regimes affected the variables under study. Therefore, this 60-month period was deemed the most beneficial to the study.

3.5. Data Collection

The general objective of this study is to assess the relationship between gambling tax and GDP in Kenya. As mentioned in section 3.3 of this study, a census inquiry was carried out as it was not practical to traverse the country to collect raw data. Therefore, in order to remain within time and cost constraints, this study used secondary data on gambling operators, gambling tax and GDP. Quantitative data on all the betting companies, lotteries, gaming vendors and prize competitions that were licensed to conduct business in Kenya over the 5-year fiscal period was obtained from the BCLB and KRA via request. Data on betting tax, lottery tax, gaming tax and prize competition tax paid over the same period was obtained from the KRA via request. Data on the different gambling tax rates which were imposed on the gross gambling revenues/turnovers that were earned by gambling operators over the same period was obtained from the Betting, Lotteries and Gaming Act, Chapter 131, Laws of Kenya. Data on GDP over the same period was obtained from the quarterly GDP reports of the Kenya National Bureau of Statistics (KNBS), which are available to the general public on its official website or via direct request.

3.6. Data Analysis and Presentation

Multiple correlation and regression analyses were performed on the data on the monetary amounts of gambling taxes paid and the GDP over the study period. The multiple correlation analysis was used to evaluate the strength of the relationship between the independent variables, i.e., betting tax, lottery tax, gaming tax and prize competition tax, and the dependent variable (GDP). A correlation matrix was generated to illustrate the relationships between all the variables. The coefficient of multiple correlation was computed to measure how well GDP can be predicted using betting tax, lottery tax, gaming tax and prize competition tax. Thereafter, the coefficient of determination, the adjusted coefficient of determination and the standard error of the estimate were also computed to determine how well the regression model fits the data. Data on the different gambling tax rates which were imposed on the gambling revenues/turnovers that were earned by gambling operators and on the changes in the GDP over the period under study were analyzed using descriptive statistics. The multiple linear regression model was applied as follows:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + \varepsilon$$

Where:

Y = the monetary amount (in millions of KSh) of the gross domestic product, measured using consumer expenditure and capital expenditure in the gambling sector over the course of the time period under study.

X_1 = the monetary amount (in millions of KSh) of the betting tax paid, measured using the betting winnings that were paid out to punters by betting companies and the tax rates that were applied over the course of the time period under study.

X_2 = the monetary amount (in millions of KSh) of the lottery tax paid, measured using the lottery winnings that were paid out to players by lotteries and the tax rates that were applied over the course of the time period under study.

X_3 = the monetary amount (in millions of KSh) of the gaming tax paid, measured using the gaming winnings that were paid out to gamers by gaming vendors and the tax rates that were applied over the course of the time period under study.

X_4 = the monetary amount (in millions of KSh) of the prize competition tax paid, measured using the monetary prize winnings that were paid out to punters by prize competitions and the tax rates that were applied over the course of the time period under study.

The data is presented in textual, tabular and graphical forms to clearly illustrate the findings. Data on the total numbers of different gambling operators, i.e., betting companies, lotteries, gaming vendors and prize competitions, which were licensed to conduct business in Kenya over the period under study, is presented in the form of a table. Data on the various tax rates which were applied on the gross gambling revenues/turnovers earned by the gambling operators over the period under study is presented in textual form. Data on the yearly changes in the number of licensed gambling companies and vendors over the period under study is presented in the form of a bar graph. Data on the various monetary amounts of gambling taxes paid by the licensed gambling operators over the period under study is presented in tabular form. Data on GDP for the period under study is presented in tabular form.

4. Research Findings

4.1. Introduction

4.1.1. Demographic Analysis

The following bar graph illustrates the number of gambling companies and vendors that were licensed to conduct business in Kenya for each year during the period under study.
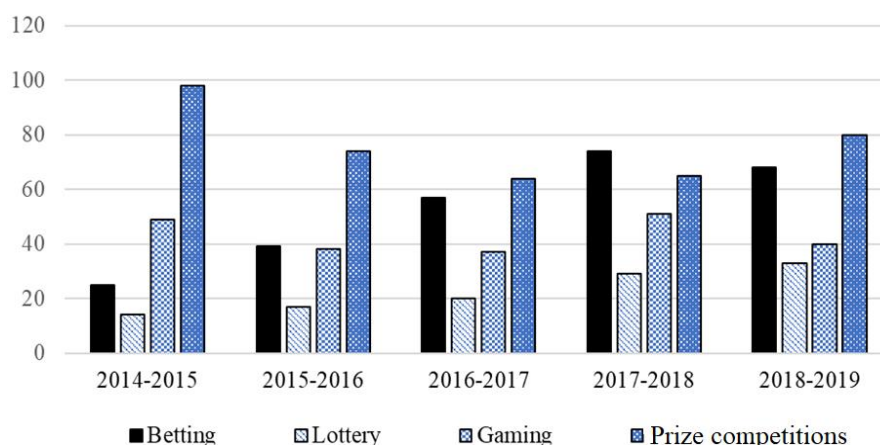

Figure 2. Annual numbers of licensed gambling operators by sub-sector.

Figure 2 is an illustration of the data obtained from the BCLB showing the various numbers of gambling operators that were licensed to conduct business in Kenya for each fiscal year over the period under study. The number of licensed betting companies increased for the first four years, i.e., 25, 39, 57 and 74 years, with a slight decrease to 68 in the last year. The yearly increases were due to the rise in the popularity of online sports betting and a subsequent rise in the profitability in the sub-sector in the country over that period. The decrease in the last year was a result of the implementation of the legislation amendments and the subsequent dispute between the government and betting companies. The number of licensed lotteries increased gradually throughout the period, i.e., 14, 17, 20, 29 and 33, respectively. This was as a result of the increase in popularity of the sub-sector fueled by the increase of mobile phones among the populace in addition to the ability to play virtually and pay via cellular money transfer services. The number of gaming vendors decreased in the second and third years, then increased in the fourth year and decreased again in the fifth year, i.e., 49, 38, 37, 51 and 40, respectively. The substantial decrease in the second year and the small decrease in the third year could have been due to the relative lack of growth of the sub-sector compared to betting and lotteries. The substantial increase in the fifth year was due to the aforementioned conflict between the government and betting operators, with casino operators hoping to capitalize on the opportunity. The number of prize competitions decreased consistently in the second, third and fourth years and then increased in the last year, i.e., 98, 74, 64, 65 and 80, respectively. The significant variation is expected because this is the most unpredictable sub-sector due to the seasonal nature of promotions. A rise or drop in its popularity may not necessarily be reflected in those particular numbers.

Table 2 shows the number of different gambling companies and vendors that paid taxes in Kenya over the time period under study according to data obtained from the KRA and categorized into the four major gambling sub-sectors, i.e., betting, lottery, gaming and prize competitions.

Table 2. Numbers of gambling operators that paid taxes for each fiscal year.

Fiscal year	Betting	Lottery	Gaming	Prize competitions
2014–2015	8	14	45	98
2015–2016	19	17	38	74
2016–2017	46	20	37	64
2017–2018	63	29	45	65
2018–2019	66	33	40	80

It was found that betting companies had an overall tax compliance rate of 76.8%, lotteries and prize competitions had a tax compliance rate of 100%, while gaming vendors had a tax compliance rate of 95.3%. According to the Betting, Lotteries and Gaming Act, Chapter 131, Laws of Kenya, in the period between July 1, 2014, and December 31, 2017, betting companies were taxed at a rate of 7.5% on their revenue, lotteries were taxed at a rate of 5% on their turnover, gaming vendors were taxed at a rate of 12% on their revenue, and prize competitions were taxed at a rate of 15% on their gross turnover. From January 1, 2018, to June 30, 2018, betting companies and gaming vendors were taxed at a rate of 35% on gaming revenue. From January 1, 2018, to September 30, 2018, lotteries and prize competitions were taxed at a rate of 35% on turnover. From July 1, 2018, to June 30, 2019, betting companies and gaming vendors were taxed at a rate of 15% on revenue/turnover. From October 1, 2018, to June 30, 2019, lotteries and prize competitions were taxed at a rate of 15% on revenue/turnover. Net winnings were taxed at a rate of 20% (withholding) between July 1, 2014, and June 30, 2018. From July 1, 2018, to June 30, 2019, a 20% withholding tax was imposed on gross winnings.

4.2. Variable-Specific Analysis

This sub-chapter contains the data that was obtained and used to assess the relationship between gambling tax and GDP. Data on betting tax, lottery tax, gaming tax and prize competition tax was used to conduct measures of central tendency and dispersion on each of the different gambling tax data sets. Data on the aforementioned gambling taxes and GDP were used to perform multiple correlation and regression analyses. The data analysis was performed using the Statistical Package for the Social Sciences (SPSS). The following table shows the measures of central tendency and dispersion on each of the gambling tax data sets that were used in this study.

Table 3. Descriptive statistics.

Statistics		Betting tax (Millions of KSh)	Lottery tax (Millions of KSh)	Gaming tax (Millions of KSh)	Prize competition tax (Millions of KSh)
N	Valid	20	20	20	20
	Missing	0	0	0	0
Mean		70.61170	10.37860	1.80505	2.70820
Median		1.70350	0.32350	0.11750	0.32400
Std. deviation		185.161590	34.075791	5.027446	6.129127
Variance		34284.814	1161.160	25.275	37.566
Skewness		2.762	4.109	3.795	2.749
Std. error of skewness		0.512	0.512	0.512	0.512
Kurtosis		6.749	17.438	15.274	7.541
Std. error of kurtosis		0.992	0.992	0.992	0.992
Range		661.307	150.992	21.985	23.886
Minimum		0.075	0.000	0.000	0.000
Maximum		661.382	150.992	21.985	23.886

Table 3 shows the measures of central tendency and dispersion for each of the independent variables over the study period. Betting tax had the highest mean of KSh 70,611,700 per quarter, followed by lottery tax (KSh 10,378,600 per quarter), prize competition tax (KSh 2,708,200 per quarter) and gaming tax (KSh 1,805,050 per quarter). This indicates that the betting sub-sector yielded the most amount of tax revenue to the government over the chosen period. Lotteries paid about seven times less tax on gambling winnings than betting operators, while gaming vendors and prize competitions paid about three-tenths and two-tenths of the amount that was paid by lotteries, respectively. Betting tax had the highest median, followed by prize competition tax, lottery tax and gaming tax. This implies that the monetary amounts of betting tax, prize competition tax, lottery tax and gaming tax paid had midpoint values of KSh 1,703,500, KSh 324,000, KSh 323,500 and KSh 117,500, respectively.

The table also shows that the standard deviations of all gambling taxes, i.e., KSh 185,161,590 for betting tax, KSh 34,075,791 for lottery tax, KSh 5,027,446 for gaming tax and KSh 6,129,127 for prize competition tax. These standard deviations are all high because they are KSh 114,549,890, KSh 23,697,191, KSh 3,222,396 and

KSh 3,420,927 greater than their respective means. This implies that most of the gambling tax data points are spread out and above their respective means. The variances of all gambling taxes are large, indicating that the quarterly amounts of gambling taxes paid are far from their respective means, and from each other. The values of KSh 2,762,000 for betting tax, KSh 4,109,000 for lottery tax, KSh 3,795,000 for gaming tax and KSh 2,749,000 for prize competition tax indicate that all the gambling tax data is highly positively skewed. This is because the monetary amounts of gambling taxes paid were much higher in the final quarters of the study period than in the other quarters. Betting operators and lotteries paid much higher amounts of betting tax and lottery tax in the last five quarters, gaming vendors paid much higher amounts of gaming tax in the last three quarters, and prize competitions paid much higher amounts of prize competition tax in the last fiscal year of the study period. The kurtosis values for all gambling taxes are greater than one, indicating that the data is relatively heavy-tailed compared to a normal distribution.

The table also shows the range, minimum and maximum values for the data. The minimum and maximum monetary amounts of betting tax paid over the study period were KSh 75,000 and KSh 661,382,000, respectively. Therefore, betting tax had a range of KSh 661,307,000. The minimum and maximum monetary amounts of lottery tax paid over the study period were zero and KSh 150,992,000, respectively. Therefore, lottery tax had a range of KSh 150,992,000. The minimum and maximum monetary amounts of gaming tax paid over the study period were zero and 21,985,000. Therefore, gaming tax had a range of KSh 21,985,000. The minimum and maximum monetary amounts of prize competition tax paid over the period under study were zero and KSh 23,886,000, respectively. Therefore, prize competition tax had a range of KSh 23,886,000. Betting tax had the largest minimum, maximum and range values in the data. This implies that betting operators paid the single largest amount of gambling tax in any quarter of the study period. It also indicates that betting is the only gambling sub-sector that paid tax on gambling winnings in the first quarter of the study period. Lottery tax had the second largest maximum and range, followed by prize competition tax, while gaming tax had the lowest maximum and range. Lottery tax, gaming tax and prize competition tax all had a minimum value of zero because no taxes on gambling winnings were paid by the corresponding gambling sub-sectors in the first quarter of the study period.

The Table 4 shows the bivariate Pearson correlation coefficients of all the variables in the study.

Table 4 shows the Pearson correlation coefficients of all the variables. Each cell in the table shows the correlation between a particular pair of variables, with significant correlations being flagged using one or two asterisks depending on the level at which each correlation is least significant. All variables are positively correlated with each other. Betting tax is highly positively correlated to both lottery tax and prize competition tax as implied by the coefficients of 0.886 and 0.893, respectively. The coefficient of 0.441 indicates that a low positive correlation exists between betting tax and gaming tax. Betting tax and GDP are moderately positively correlated, with a coefficient of 0.638.

Table 4. Correlation matrix.

Correlations						
		Betting tax (In millions of KSh)	**Lottery tax (In millions of KSh)**	**Gaming tax (In millions of KSh)**	**Prize competition tax (In millions of KSh)**	**Gross domestic product (In millions of KSh)**
Betting tax (-)	Pearson correlation	1	0.886**	0.441	0.893**	0.638**
	Sig. (2-tailed)		0.000	0.051	0.000	0.002
	N	20	20	20	20	20
Lottery tax (In millions of KSh)	Pearson correlation	0.886**	1	0.257	0.590**	0.493*
	Sig. (2-tailed)	0.000		0.274	0.006	0.027
	N	20	20	20	20	20
Gaming tax (In millions of KSh)	Pearson correlation	0.441	0.257	1	0.601**	0.576**
	Sig. (2-tailed)	0.051	0.274		0.005	0.008
	N	20	20	20	20	20
Prize competition tax (In millions of KSh)	Pearson correlation	0.893**	0.590**	0.601**	1	0.689**
	Sig. (2-tailed)	0.000	0.006	0.005		0.001
	N	20	20	20	20	20
Gross domestic product (In millions of KSh)	Pearson correlation	0.638**	0.493*	0.576**	0.689**	1
	Sig. (2-tailed)	0.002	0.027	0.008	0.001	
	N	20	20	20	20	20

Note: ** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).

A very low positive correlation exists between lottery tax and gaming tax, as signified by the coefficient of 0.257. Lottery tax and prize competition tax are moderately positively correlated, with a coefficient of 0.590.

The coefficient of 0.493 implies that a low positive correlation exists between lottery tax and GDP. Gaming tax and prize competition tax are moderately positively correlated, with a coefficient of 0.601. Gaming tax and GDP are also moderately positively correlated, with a coefficient of 0.576. The coefficient 0.689 indicates that a moderate positive correlation exists between prize competition tax and GDP.

Table 5. Multiple regression analysis model summary.

Model summary				
Model	**R**	**R-squared**	**Adjusted R-squared**	**Std. error of the estimate**
1	0.795[a]	0.632	0.534	19.616344

Note: [a] denotes the predictors: Constant, prize competition tax, lottery tax, gaming tax, and betting tax (All in millions of KSh).

Table 5 contains a summary of the multiple regression analysis model that was generated in the study. It shows that: (a) the multiple correlation coefficient (R) value is 0.795, indicating a good quality level of prediction of GDP; (b) the value of the coefficient of determination (R^2) is 0.632, which implies that when taken as a set, the predictors (betting tax, lottery tax, gaming tax and prize competition tax) account for approximately 63% of the variance in GDP; (c) the value of the adjusted R^2 is 0.534, which indicates that the model is a good fit; (d) the shrinkage, i.e., the difference between R^2 and the adjusted R^2 is 0.098; and (e) the standard error of the estimate is 19.616344, which is the average distance of the data points from the regression line. In other words, this means that, on average, the data points are KSh 19,616,340 away from the regression line.

The following table illustrates the analysis of variance of the multiple regression model that was generated in the study.

Table 6. Analysis of variance.

ANOVA[a]						
Model		**Sum of squares**	**Df**	**Mean square**	**F**	**Sig.**
1	Regression	9919.058	4	2479.764	6.444	0.003[b]
	Residual	5772.015	15	384.801		
	Total	15691.072	19			

Note: [a] denotes the dependent variable of GDP; [b] denotes the predictors: Constant, Prize Competition Tax, lottery tax, gaming tax, and betting tax (All in millions of KSh).

Table 6 shows that the overall regression model of the study is a good fit for the data. This affirms the information contained in Table 7. This is because the variables (betting tax, lottery tax, gaming tax and prize competition tax) were found to statistically significantly in predicting GDP [F (4, 15) = 6.444, p < .005]. Also illustrated in Table 6 are the sum of squares and the mean square associated with the regression model.

Table 7. Regression coefficients.

Coefficients[a]						
		Unstandardized Coefficient		**Standardized Coefficient**		
Model		**B**	**Std. error**	**Beta**	**T**	**Sig.**
1	(Constant)	199.724	5.830		34.256	0.000
	Betting tax (In millions of KSh)	-0.113	0.057	-7.287	-1.988	0.033
	Lottery tax (In millions of KSh)	0.347	0.168	4.119	2.065	0.029
	Gaming tax (In millions of KSh)	-0.120	0.181	-0.209	-0.662	0.259
	Prize competition tax (In millions of KSh)	2.293	1.061	4.890	2.161	0.024

Note: a. Dependent variable: GDP (In millions of KSh).

Table 7 illustrates the coefficients of the regression model of the study. It shows the values of the constant and the coefficients of each independent variable in the regression equation. Betting tax, lottery tax, gaming tax and prize competition tax have respective coefficients of -0.113, 0.347, -0.120 and 2.293. The table also indicates that when each predictor is tested at alpha = 0.05, betting tax is significant (p = 0.033), lottery tax is significant (p = 0.029), gaming tax is not significant (p = 0.259) and prize competition tax is significant (p = 0.024). This indicates that the amounts of unique variance that each of the predictors account for in GDP are statistically significant. It also indicates that the amount of unique variance that the predictor of gaming tax accounts for in GDP is not statistically significant.

For the dependent variable, the following table illustrates the quarterly GDP data estimates – in millions of Kenyan shillings – for the gambling sector over the period under study:

Table 8. Quarterly GDP data.

Quarter/Fiscal year	July–September	October–December	January–March	April–June
2014/2015	154.61	187.63	195.31	193.91
2015/2016	189.91	198.32	207.38	201.77
2016/2017	195.10	213.16	216.67	211.13
2017/2018	217.03	231.15	236.76	234.76
2018/2019	242.27	263.40	265.39	261.53

Table 8 contains the monetary amounts (in millions of KSh) of GDP for each quarter over the period under study. It illustrates the gambling-related GDP data that was obtained from the quarterly Kenyan GDP reports from the KNBS for the study period. The data shows that GDP grew steadily in all but seven quarters. The GDP grew at an average rate of 9% per fiscal year over the period, with the largest growth rate being 10% from 2017/2018 to 2018/2019. The average growth rate of 9% is much greater than that of the country's entire GDP, which grew at an average rate of 5.62% per year over the same period, according to the World Bank. The greater growth rate is attributable to the growth of the gambling sector in the country over that period, as discussed in sections 1.1.3 and 1.2 of this study. That growth was as a result of a massive increase in consumer expenditure and private business investment in the sector, which is reflected in the GDP. This GDP data was then used alongside gambling tax data to perform the multiple regression analysis.

4.3. Betting Tax

The following table contains the monetary amounts (in millions of KSh) of betting tax paid in each quarter over the study period.

Table 9. Quarterly betting tax data.

Quarter/Fiscal year	July–September	October–December	January–March	April–June
2014/2015	0.075	0.139	0.415	0.236
2015/2016	3.045	0.370	5.425	0.337
2016/2017	4.249	0.545	1.059	3.055
2017/2018	0.114	0.116	2.348	9.841
2018/2019	12.141	531.465	175.877	661.382

Table 9 illustrates the quarterly monetary amounts of betting tax paid over the study period. Monthly monetary amounts of betting tax paid over the period were aggregated for each three-month interval to obtain the best possible output from the analysis. A brief look at the table reveals that the monetary amounts grew steadily and rapidly throughout the period, thus backing up the information in sections 1.1.3 and 1.2 regarding the sudden emergence and rise in popularity of online sports betting in the country. The massive increase of betting tax paid in the last year is ascribed to the implementation of the Finance Bill 2018, which prevented winning punters from deducting their gambling losses from their winnings before taxation. This data was used alongside lottery tax, gaming tax, prize competition tax and GDP data to perform a multiple regression analysis.

As illustrated in Table 7 above, betting tax has a coefficient of -0.113 in the regression model. This implies that an increase of KSh 1,000,000 in the monetary amount of tax levied from betting would lead to a decrease of KSh 113,000 in GDP if no taxes were levied from the other sub-sectors. This negative relationship indicates that a high betting tax rate for winnings would likely be detrimental to the growth of both the betting sub-sector and GDP. In the period between July 1, 2014, and December 31, 2017, when betting companies were taxed at a rate of 7.5% on betting revenue, the GDP grew by an average rate of 3.33% per quarter. Thereafter, in the period between January 1, 2018, and June 30, 2018, when the betting tax rate was raised to 35%, the GDP shrank by 0.84%. In the period between July 1, 2018, and June 30, 2019, when the betting tax rate was reduced to 15%, the GDP grew by an average rate of 2.67% per quarter. These findings affirm the information discussed in section 1.1 of this study, i.e., high betting tax rates could lead to increased offshore betting, illegal betting and numerous other activities that are harmful to GDP.

The low betting tax rate regime appears to have been conducive to the steady, rapid growth of both the betting sub-sector, which is reflected in section 4.2 of this study, and GDP grew at a rapid rate during that period, but that meant that very little revenue was collected from the sub-sector. In addition, the populace was not sufficiently dissuaded from betting, the harmful effects of which would likely have been reflected in the GDP in the long run. Thereafter, although the number of licensed betting operators decreased slightly, which could be as a result of the dispute between the operators and the government, the GDP grew rapidly when the sub-sector was under the moderate betting tax rate regime, which was imposed along with some indirect taxes on betting activities. The above findings comport with Koross (2016), who found that the probability of winning large amounts of money was the biggest motivator for Kenyan punters, which indicates that a high betting tax rate would not adequately dissuade them from partaking in betting. The findings also agree with Paton et al. (2002), who found that the government reduced betting taxes because the rise of internet betting resulted in a

scenario in which UK bookmakers had to compete in a global market with lower entry barriers and greater substitution possibilities populated by firms that are subject to a much lower tax burden.

4.4. Lottery Tax

The following table contains the monetary amounts (in millions of KSh) of lottery tax paid in each quarter over the study period.

Table 10. Quarterly lottery tax data.

Quarter/Fiscal year	July–September	October–December	January–March	April–June
2014/2015	0.000	0.077	0.249	0.098
2015/2016	0.929	0.073	1.252	0.114
2016/2017	0.727	0.153	0.316	1.424
2017/2018	0.017	0.037	0.331	2.133
2018/2019	1.829	35.829	10.992	150.992

Table 10 illustrates the quarterly monetary amounts of lottery tax paid over the study period. Monthly monetary amounts of lottery tax paid over the period were aggregated for each three-month interval to obtain the best possible output from the analysis. A brief look at the table reveals that these monetary amounts fluctuated by relatively small margins for most of the period. This reflects the ability of winning punters to offset their gambling losses before paying lottery taxes, and the ambiguous wording in the Betting, Lotteries and Gaming Act, which provided a tax avoidance loophole for lotteries and winning punters over the first four fiscal years in the study, as discussed in sections 1.1.3 and 1.2. The dramatic increase of lottery tax paid in the last year is attributed to the implementation of the Finance Bill 2018, which sealed the aforementioned loophole and prevented winning punters from deducting their gambling losses from their winnings before taxation, in addition to the government crackdown on all lotteries, particularly those that had tax arrears, which followed soon thereafter.

As illustrated in Table 7, lottery tax has a coefficient of 0.347 in the regression model. This implies that an increase of KSh 1,000,000 in the monetary amount of tax levied from lottery gambling would lead to an increase of KSh 347,000 in the GDP if no taxes were levied from the other sub-sectors. This positive relationship indicates that a high lottery tax rate for winnings would likely contribute significantly to the growth of the GDP. In the period between July 1, 2014, and December 31, 2017, when lotteries were taxed at a rate of 5% on lottery turnover, the GDP grew by an average rate of 3.33% per quarter. Thereafter, in the period between January 1, 2018, and September 30, 2018, when that lottery tax rate was raised to 35%, the GDP grew by an average rate of 1.18% per quarter. In the period between October 1, 2018, and June 30, 2019, when the lottery tax rate was reduced to 15%, the GDP shrank by an average rate of 0.35% per quarter. This implies that the low lottery tax rate regime was likely conducive to the steady, rapid growth of the lottery sub-sector and GDP, but that meant that very little revenue was collected from the sub-sector. In addition, the tax avoidance loophole on the taxation of lottery winnings meant that the populace was not sufficiently dissuaded from lottery gambling during that period, which could have been potentially harmful to the GDP in the long term.

On the other hand, the GDP grew moderately when the sub-sector was under a high lottery tax rate regime. However, the high tax rate regime appears to have adversely affected the business operations of lotteries and consequently stymied the growth of the sub-sector due to the other tax obligations and charitable donation requirements that lotteries are subjected to by the regulator. Regardless of the fact that the number of lotteries increased significantly, GDP shrank minimally when the sub-sector was under the moderate tax rate regime, which was imposed along with some indirect taxes on lottery gambling activities and the sealing of the aforementioned lottery winnings tax loophole. The above findings comport with Borg et al. (1993), who found that the amount by which lotteries increased the total state revenue in the US was far less than the revenue that was collected from lottery games. The findings also comport with Clotfelter and Cook (1993), who found that the implicit tax rate of about 40% on gross lottery purchases in the US was too high, even in comparison to the excise tax rates on alcohol and tobacco.

4.5. Gaming Tax

The following table contains the monetary amounts (in millions of KSh) of gaming tax paid in each quarter over the study period.

Table 11. Quarterly gaming tax data.

Quarter/Fiscal year	July–September	October–December	January–March	April–June
2014/2015	0.000	0.034	0.074	0.045
2015/2016	0.722	0.160	0.850	0.044
2016/2017	0.112	0.111	0.047	0.123
2017/2018	0.043	0.039	0.132	0.290
2018/2019	0.333	5.972	21.985	4.985

Table 11 illustrates the quarterly monetary amounts of gaming tax paid over the study period. Monthly monetary amounts of gaming tax paid over the period were aggregated for each three-month interval to obtain the best possible output from the analysis. A brief look at the table reveals that these monetary amounts fluctuated by relatively small margins for most of the period, thus reflecting the ability of winning punters to offset their gaming losses before paying gaming taxes, in addition to the aforementioned ambiguous wording in the Betting, Lotteries and Gaming Act, which provided a tax avoidance loophole for gaming vendors and winning punters over the first four fiscal years in the study, as discussed in sections 1.1.3 and 1.2. The massive increase in gaming tax paid in the last year is ascribed to the implementation of the Finance Bill 2018, which sealed the aforementioned loophole and prevented winning punters from deducting their gaming losses from their winnings before taxation, in addition to the government crackdown on all gaming vendors, particularly those with tax arrears, which followed thereafter. This data was used alongside betting tax, lottery tax, prize competition tax and GDP data to perform the multiple regression analysis.

As illustrated on Table 7, gaming tax has a coefficient of -0.120 in the regression model. This implies that an increase of KSh 1,000,000 in the monetary amount of tax levied from gaming would lead to a decrease of KSh 120,000 in GDP if no taxes were levied from the other sub-sectors. This negative relationship indicates that a high gaming tax rate for winnings is likely to be detrimental to the growth of GDP. In the period between July 1, 2014, and December 31, 2017, when gaming vendors were taxed at a rate of 12% on gaming revenue, the GDP grew by an average rate of 3.33% per quarter. Thereafter, in the period between January 1, 2018, and June 30, 2018, when the gaming tax rate was raised to 35%, the GDP shrank by 0.84%. In the period between July 1, 2018, and June 30, 2019, when the gaming tax rate was reduced to 15%, GDP grew by 2.67% per quarter. This affirms the information discussed in section 1.1 of this study, that high gaming tax rates lead to increased offshore gaming, illegal gaming and numerous other activities that are harmful to GDP. This indicates that, initially, the low gaming tax rate regime likely contributed to the steady, rapid growth of GDP. However, that meant that very little revenue was collected from the sub-sector and the populace was not sufficiently disinclined from gaming, the adverse effects of which would likely have been reflected in the GDP in the long run.

In spite of the fact that the number of gaming vendors increased substantially, GDP shrank minimally when the sub-sector was under the high tax rate regime. This also meant that the gaming vendors were severely distressed, which caused a big decrease in their number in the last fiscal year of the study. The GDP grew steadily and rapidly when the sub-sector was under a moderate gaming tax rate regime, which was imposed along with some indirect taxes on gaming activities and sealed the aforementioned gaming winnings tax loophole, irrespective of the significant decrease in the number of gaming vendors over that period. The above findings contradict Ahlgren et al. (2009), who found that the increase in gaming tax had a negative effect on gaming demand in Illinois. However, the findings comport with Gu and Li (2009), who found that a high gaming tax rate can only be applied if most of the tax is borne by visitors, otherwise a low gaming tax rate has to be adopted because a low gaming tax rate will attract outside investment which will be conducive to overall efficiency.

4.6. Prize Competition Tax

The following table contains the monetary amounts (in millions of KSh) of prize competition tax paid in each quarter over the study period.

Table 12. Quarterly prize competition tax data.

Quarter/Fiscal year	July–September	October–December	January–March	April–June
2014/2015	0.000	0.003	0.184	0.067
2015/2016	0.464	0.123	0.843	0.049
2016/2017	0.503	0.043	0.158	0.475
2017/2018	0.111	0.012	0.496	0.723
2018/2019	2.328	23.886	10.992	12.704

Table 12 illustrates the quarterly monetary amounts of prize competition tax paid during the study period. Monthly monetary amounts of prize competition tax paid over the period were aggregated for each three-month interval to obtain the best possible output from the analysis. A brief look at the table reveals that these monetary amounts fluctuated by relatively small margins for most of the period, thus reflecting the ability of winning punters to offset their gaming losses before paying prize competition taxes, in addition to the ambiguous wording in the Betting, Lotteries and Gaming Act, which provided a tax avoidance loophole for prize competitions and winning punters over the first four fiscal years in the study, as discussed in sections 1.1.3 and 1.2 of this study. The massive increase of prize competition tax paid in the last year is attributed to the implementation of the Finance Bill 2018, which prevented winning punters from deducting their gambling losses from their winnings before taxation and to the government crackdown on all prize competitions, particularly those with tax arrears, which followed thereafter. This data was used alongside betting tax, lottery tax, gaming tax and GDP data to perform the multiple regression analysis.

As illustrated in Table 7, prize competition tax has a coefficient of 2.293 in the regression model. This implies that an increase of KSh 1,000,000 in the monetary amount of tax levied from prize competitions would lead to an increase of KSh 2,293,000 in GDP if no taxes were levied from the other sub-sectors. This positive relationship indicates that a high tax rate for prize competition winnings would likely contribute to the steady, rapid growth of both the sub-sector and the GDP. In the period between July 1, 2014, and December 31, 2017, when prize competitions were taxed at a rate of 15% on their turnovers, the GDP grew by an average rate of 3.33% per quarter. Thereafter, in the period between January 1, 2018, and September 30, 2018, when the prize competition tax rate was raised to 35%, the GDP grew by 1.18% per quarter. In the period between October 1, 2018, and June 30, 2019, when the prize competition tax rate was reduced to 15%, the GDP shrank by 0.35% per quarter. This implies that the low tax rate regime for prize competitions likely contributed to the steady, rapid growth of GDP. However, the number of licensed prize competitions decreased steadily over that period. The low tax rate regime also meant that very little revenue was collected from the sub-sector. In addition, the tax avoidance loophole on the taxation of monetary prize winnings meant that the populace was not adequately disinclined from participating in prize competitions during that period, which could have been potentially detrimental to the growth of GDP in the long term.

On the other hand, GDP grew moderately when the sub-sector was under a high tax rate regime. However, the high tax rate regime also adversely affected the business operations of prize competitions and consequently stymied the growth of the sub-sector as there was only a marginal increase in the number of licensed operators in that period. The number of licensed prize competitions increased significantly under the moderate tax rate regime, which was imposed along with some indirect taxes which sealed the aforementioned winnings tax loophole; however, the GDP shrank minimally in that period. The above findings comport with Petry et al. (2006), who found that exposure to prize-based contingency management did not lead to an increase in gambling among stimulant abusers in the US. They also comport with Mealem and Nitzan (2014), who found that the superiority of optimal taxation under the all-pay auction is preserved in terms of equity and effectiveness relative to optimal taxation under any contest-success function when a budget surplus is allowed.

5. Conclusions and Recommendations

The moderate betting tax rate regime, which imposed a 15% rate on gross betting revenue, was the most suitable tax rate regime for the betting sub-sector over the study period. As the findings reveal, this is the betting tax rate regime during which the GDP grew at a very fast rate on average from quarter to quarter, while the government levied proportionate amounts of taxes on operators and punters in the sub-sector. It is also conducive to the growth of the sub-sector.

A significant increase in the betting winnings tax rate would likely not contribute to GDP growth. The outputs of the regression model in Section 4 reveal that an increase in the monetary amount of tax paid on betting winnings would lead to a slight decrease in GDP if no taxes were levied from the other sub-sectors. This negative relationship between betting tax and GDP indicates that the applied rate may not have contributed toward the growth of GDP and was therefore not the most suitable rate for the betting sub-sector over the study period.

If properly regulated and provided with a business-friendly environment, the betting sub-sector has the potential to grow and thrive in the Kenyan market. Using the number of licensed betting companies as a measure of the growth of the betting sub-sector from year-to-year, the low tax rate regime, which imposed a 5% rate on gross lottery turnover, was the most suitable tax rate regime for the lottery sub-sector over the study period. This is the regime during which GDP grew at the fastest rate on average from quarter to quarter. During the high tax rate regime, which imposed a 35% rate on gross lottery turnover, the GDP grew at a much slower rate on average from quarter to quarter than it did during the low tax rate regime. GDP shrank slightly during the period of the moderate tax regime, which imposed a 15% rate on gross lottery turnover.

An increase in the lottery winnings tax rate would likely contribute significantly to the growth of GDP. The findings of this study reveal that a marginal increase in the monetary amount of tax paid on lottery winnings would increase the GDP by about a third of the value of that monetary amount if no taxes were levied from the other sub-sectors. This positive relationship between lottery tax and GDP indicates that the applied rate was the most suitable for the sub-sector and may have contributed significantly to the growth of GDP over the study period.

The lottery sub-sector has the potential to grow and prosper in the Kenyan market if properly regulated and provided with a business-friendly environment. The moderate gaming tax rate regime, which imposed a 12% rate on the gross gaming revenue (GGR), was the most suitable tax rate regime for the gaming sub-sector over the study period. During this gaming tax rate regime, GDP grew at the fastest rate on average from quarter to quarter, while the government levied a proportionate amounts of taxes on vendors in the sub-sector. That happened despite the loopholes, which meant that gamers in the sub-sector could avoid paying gaming taxes for all of that period.

The findings of this study on whether an increase or decrease in the gaming winnings tax rate would contribute to the growth or shrinkage of GDP were inconclusive. This is because despite the gaming tax regression coefficient indicating that an increase in the monetary amount of tax paid on gaming winnings would

lead to a slight decrease in the GDP, if no taxes were levied from the other sub-sectors, the output in Table 12 illustrates that gaming tax was not statistically significant to the regression model. Therefore, this study could not determine whether the applied tax rate on gaming winnings was the most suitable rate for the gaming sub-sector or whether it contributed to the growth or shrinkage of GDP over the study period.

The moderate tax rate regime, which imposed a 15% rate on gross turnover during the first 14 quarters of the period under study, was the most suitable tax rate regime for the prize competitions sub-sector over the period under study. This study found that the GDP grew at the fastest rate on average from quarter to quarter during that tax rate regime, while the government levied proportionate amounts of taxes from operators in the sub-sector. That tax rate regime is also conducive to the growth of the sub-sector.

An increase in the monetary prize winnings tax rate would likely contribute massively to the GDP. The findings of this study indicate that any increase in the monetary amount of winnings tax would increase the GDP by more than twice the value of that monetary amount, if no taxes were levied from the other sub-sectors. This positive relationship between prize competition tax and the GDP indicates that the applied rate was the most suitable for the sub-sector and may have contributed significantly towards the growth of the GDP over the period under study.

The amendment that was made to the Betting, Lotteries and Gaming Act to prevent punters from offsetting their gambling losses by subtracting them from their gross monetary winnings before paying taxes, in addition to sealing the loophole that only mandated winning punters from the betting sub-sector to pay taxes on their winnings, was successful, as the monetary amounts of tax paid on prize winnings increased substantially in the final three quarters of the study period.

The lack of clarity regarding how non-monetary prize winnings are taxed limited this study to the monetary prize winnings whose taxes were paid over the chosen study period. This may have caused a tax avoidance loophole for winners of non-cash prizes, leading to the loss of potential revenue for the government from the sub-sector. This also means that the findings of this study may be unreliable when assessing the taxation of non-monetary prize winnings.

6. Recommendations

6.1. Betting Tax

A moderate tax rate regime should be imposed on betting operators. Due to the sheer amounts of betting revenues that betting operators earn, a 15% rate on gross betting revenue yields a large amount of revenue for the government. This rate is also conducive to industrial growth, which would mean that the sub-sector may contribute significantly to GDP growth.

The betting winnings tax rate should be decreased. In order to adequately dissuade its populace from engaging in betting, instead of increasing taxes on winnings, the government should educate the public on the harmful effects of betting, and endeavor to rehabilitate problem gamblers, etc. This would likely contribute more significantly to GDP growth than simply increasing the tax rate for betting winnings. This would succeed in practice because most winning punters in the betting sub-sector only earn small amounts of money because they place bets of small amounts on individual events, e.g., sports and award shows and/or individual actions occurring in those events, such as goals scored in football, thus increasing the tax rate for betting winnings would not adequately disincline the masses from partaking in betting. Therefore, increasing the tax rate for betting winnings would not be ideal for the sub-sector.

Keeping in mind the sudden, rapid emergence and continued growth in popularity of online betting in the country over the study period and beyond, lawmakers and government institutions, including the National Treasury, the BCLB and the KRA, should all work in tandem to identify any and all betting tax avoidance loopholes and endeavor to ensure that they create the appropriate legislation and regulatory framework in order to seal the loopholes and ensure that no amount of government revenue from this sub-sector is lost.

Betting operators, stakeholders, lawmakers, regulators, and all other interested parties should endeavor to ensure that disputes between the government and betting operators are resolved reasonably and expeditiously to prevent bans, the closure of companies, and other drastic measures which could occur in the sub-sector, because in the end, the measures all translate to lost capital expenditure and government revenue from the sub-sector.

6.2. Lottery Tax

A low tax rate regime should be imposed on lotteries. This is because a low tax rate regime would be the most conducive for the growth of the sub-sector and would likely contribute most significantly to the growth of GDP. Moreover, most lotteries do not earn large amounts of revenues, so imposing a low tax rate on lotteries would not drastically affect the amount of government revenue levied from the sub-sector. In addition, regardless of the fact that imposing a low tax rate would mean that the government would collect a smaller amount of revenue from the sub-sector, the government could offset that 'lost' revenue by significantly raising the tax rate on lottery winnings.

The tax rate on lottery winnings should be increased because a higher tax rate would likely contribute more significantly to the growth of GDP. The government would collect more revenue from the sub-sector, thereby

offsetting any 'lost' revenue from decreasing the lottery tax rate as discussed above, while simultaneously substantially dissuading the masses from partaking in lottery gambling. This is sensible in practice because most winning players from this sub-sector earn large amounts of money and hence increasing the lottery winnings tax rate would yield a lot of revenue for the government.

Lawmakers and government institutions, including the National Treasury, the BCLB and the KRA, should all work in tandem to identify any lottery tax avoidance loopholes and endeavor to ensure that they create the appropriate legislation and regulatory framework to seal the loopholes and ensure that no amount of government revenue from the lottery sub-sector is lost. It is important to look into the newer modes of lottery gambling, such as using cellular text messages, as opposed to just lottery ticket sales and other old-fashioned methods.

Lottery operators, stakeholders, lawmakers, regulators, and all other interested parties should endeavor to ensure that disputes between the government and lottery operators are resolved to prevent bans, the closure of companies and other drastic measures which could occur in the sub-sector because these measures all translate to lost capital expenditure and government revenue from the sub-sector.

6.3. Gaming Tax

A moderate tax rate regime should be imposed on gaming vendors. This would be conducive to the growth of the sub-sector if the government levied a proportionate amount of revenue from the sub-sector. Also, a moderate tax rate would likely contribute most significantly to the growth of GDP. In addition, the loopholes which were alluded to in the corresponding conclusion were sealed thereafter, which would lead to an increase in government revenue.

The government should impose the gaming winnings tax rate that it deems most appropriate for the sub-sector. This is because the findings of this study on the relationship between gaming winnings tax and GDP were inconclusive; therefore, the study was unable to determine whether an increase or decrease in the tax rate would contribute to the growth or shrinkage of GDP.

Due to the emergence and growth of online gaming in the country over the past decade or so, lawmakers and government institutions should work in tandem to identify gaming tax avoidance loopholes, create the appropriate legislation and regulatory framework to seal the loopholes, and ensure that no amount of government revenue from the gaming sub-sector is lost.

6.4. Prize Competition Tax

A moderate tax rate regime should be imposed on prize competitions. This would significantly contribute to the growth of GDP, ensure that the government collects a proportionate amount of revenue from the sub-sector, and be conducive to the growth of the sub-sector. This is likely to be beneficial in practice because most prize competitions do not earn large amounts of revenue, therefore raising the tax rates would not yield that much more revenue for the government.

The prize winnings tax rate should be increased. This is because the findings of this study show that a higher tax rate would contribute more significantly to the growth of GDP. A higher tax rate would also serve to adequately dissuade members of the general public from taking part in prize competitions, which would also likely contribute to the growth of GDP in the long term.

Lawmakers and government institutions should work together to identify any prize competition tax avoidance loopholes and ensure that they create the appropriate legislation and regulatory framework in order to seal the said loopholes and ensure that no amount of government revenue from the prize competitions sub-sector is lost.

The government should endeavor to come up with the most suitable legislation for the sub-sector that offers clear guidelines on how non-monetary prize winnings should be taxed. This could be based on: (a) the average local market value of the prizes at the time when they are won, (b) the highest local market value of the prizes at the time when they are won, or (c) the expected cost of the prizes at the time when they are won, e.g., local/international, or all expenses paid trips. This would ensure that there is clarity among operators, stakeholders and punters in the sub-sector and any potential loopholes would consequently be sealed.

6.5. Areas for Future Research

In spite of the fact that gambling taxes are a significant source of revenue for the government, previous studies have found pathological gambling to have numerous, significant socio-economic costs for the afflicted punters and for society. Future studies could assess the impact that the increased gambling taxes have had on pathological gambling in Kenya. They could also delve into the actual economic cost, in monetary terms, of the effects of pathological gambling in the country. This would help to determine the net positive effects of legalized gambling on the country's GDP.

Prize competitions usually offer punters the opportunity to win non-cash prizes, e.g., cars, motorcycles, houses, electrical household appliances, computers, smartphones, or furniture. Sometimes, various betting companies and lotteries do the same. However, there is ambiguity over the taxation of non-cash prizes as the government has yet to come up with unequivocal legislation on how non-cash prize winning punters should be

taxed on their winnings. Future studies could assess the various ways in which non-cash prizes could be taxed and thereafter determine the best way to apply it to the Kenyan gambling sector.

On July 1, 2018, the government implemented a 20% tax rate on gross gambling winnings. Future studies could examine the effects of the taxation of gambling winnings on consumer demand. Although the imposition of winnings tax on punters, in addition to barring them from offsetting their gambling losses against their winnings, could presumably lessen the appeal of gambling to its consumers and to the general public, it could be argued that this is not necessarily the case. For instance, consider a punter who regularly bets on sporting events. If he/she places multi-bets of KSh 100 weekly with the aim of winning a weekly KSh 10 million jackpot, a 20% tax on the gross winnings means that if they were to win that weekly jackpot, they would pocket KSh 8 million after the tax deduction. On the other hand, if they continued placing these bets for a year and never won, they would have lost about KSh 5,200 for the chance to win KSh 8 million after tax. This means that the potential trade-off would still be worth the risk to them, thus knowing that a tax on winnings exists in their jurisdiction would not discourage them from partaking in sports betting.

Previous studies have found legalized gambling to have numerous economic benefits, e.g., creation of employment, attracting huge foreign investments, and complementing sectors such as hospitality, tourism and entertainment. In addition, in other jurisdictions around the world, the tax revenue collected from gambling operators has been used to fund infrastructure development projects and natural disaster management programs. Therefore, future studies could look into the ways in which gambling can be used by the national government and by county governments as a tool for economic development in Kenya.

Future studies could assess the impact, if any, of indirect gambling taxes on gambling activities in Kenya. In January 2018, the government introduced indirect taxes on punters and gambling companies. They include tax on internet and data services, excise tax on cellular money transfers, and tax on bank fees for money transfers. Further studies could seek to examine the following: (a) whether the indirect taxes caused gambling activities to increase or decrease in the country, (b) whether the indirect taxes caused punters to place their bets on non-Kenyan-based online platforms in an attempt to avoid the indirect taxes, and (c) whether the indirect taxes caused betting companies and/or lotteries to reduce the monetary amount of their jackpots, or in the case of prize competitions, whether the indirect taxes caused them to reduce the amount or quality of their prizes or raise the cost of entry or participation on their platforms.

By introducing indirect taxes on gambling activities in the country in January 2018, the government expanded the gambling tax base. Future studies could look into how the government can further expand the tax base as opposed to only increasing tax rates. They could identify other areas within the gambling business which could be subjected to taxation. This would be beneficial to the regulation of the gambling sector in Kenya.

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