Participation in Sports Betting and Youth Welfare Nexus: An Endogenous Switching Regression Model in Kenyan Perspective

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Research Article

Abstract

This paper seeks to establish the nexus between sports betting participation and youth welfare in Kenya. The focus of the study is the youth based in the Kajiado North constituency which has the highest youth population within the Nairobi metropolitan statistical area. There are 9 universities around the region. The study sample size is 341. Endogenous switching regression estimation is adopted to determine the association between sports betting participation and youth welfare. From the regression analysis, this study obtains a significant and negative coefficient of -1.4971 relating to sports betting and youth welfare. This suggests that sports betting negatively affects youths' overall welfare in a 1.49 percent greater manner than those who abstain from it. It is important to address the factors that lead the youth to participate in sports betting, particularly control of commercials by making it mandatory that they issue disclaimers that doing so may worsen one's welfare. It is also essential to properly educate young people on financial management in order that they may channel their money toward worthwhile endeavors rather than sports betting.

Keywords: Sports Betting, Youth, Welfare, Endogenous Switching Regression, Kenya

1. Introduction

Up until the early 2010s, the only places that Kenyans could legally place bets were in Casino and horse racecourses. However, with the recent technological advancement leading to access to mobile phones and the internet, gambling has taken a new shape and form. Betting companies have introduced new ways of placing bets using Short Messaging services and easy-to-navigate websites. To this end, people of all walks and ages can now comfortably take part in gambling from the comfort of their homes. Sports betting has become so widespread in Kenya that it is raising eyebrows among policymakers and the general society. Geopoll (2017) estimates that 76 percent of Kenyans between the ages of 17 and 35 take part in sports betting, the largest in the East African region. These grim statistics are a cause for alarm concerning the predisposing factors to this habit and its ramification for youth welfare (Omondi, 2018).

Extant literature has shown that several factors contribute to youth participation in betting. According to the survey conducted by Geopoll in 2017, it was found that male youths are more prone to betting than their female counterparts. Mwadime (2017) noted that lower-income students are also considered more susceptible to betting than their higher-income and employed peers respectively. In 2019 the Kenyan government began a crackdown on betting companies owing to concerns raised by the society at large over

irresponsible betting. It had been observed that betting advertisements dominated the promotion sector among news agencies, a situation that lured more youths into gambling. For this reason, the government placed restrictions on betting adverts. It is, however, worth noting that advertisements related to betting still find their way to the youth through advertisements on social media. This factor cannot, therefore, be ruled out as an influence on sports betting participation (Gathuru, 2021).

In addition to the aforementioned factors, there is a growing worry that unemployed youths view betting as a way of making quick money. Many young people consider sports betting as a tool for poverty eradication (Humphreys, Lee & Soebbing, 2009). This notion is largely propelled by the advertising craze by betting firms and success stories of mega jackpot wins which leads to the trapping of many youths into the habit (Gathuru, 2021). In 2020 the Kenyan government introduced corporate taxes to sport betting firms and a 20 percent excise duty on the stake of those taking part in betting in a bid to regulate the sector. According to critics, this move appears misguided, citing that the government is operating on double standards. On one hand, it appears as if it is regulating but on the other, it is reaping big in terms of taxes from the lucrative business. The number of betting companies has increased from 76 in 2019 to 100 in 2022 amid the hefty taxes (Mutai, 2022).

There have been so many speculations about the adverse effects of sports betting participation by the youth. While there are several punters that make gains from the activity, there are enormous losses and missed opportunities by others. This might partly explain why the business is lucrative in the present age. There have been several reports of mental health cases among punters due to losses and to the worst extent, suicide. Some young people have used money meant for other uses to participate in betting. Some even finance their addiction using loans from financial institutions and mobile applications. This has led to the economic impoverishment of gamblers as well as a rise in levels of financial dependency among the youth (Chamboko & Guvuriro, 2021). Against this background, the present study is set out to investigate the connection between sports betting participation and the welfare of the youth in Kenya.

2. Theoretical Framework

In 2008, the Canadian consortium for gambling research designed a framework for the identification, measurement, and assessment of the socioeconomic impact of Gambling (SEIG, Framework). The framework is also designed to aid researchers and policymakers to analyze the cost and the benefits of legalized Gambling. The SEIG framework comprises six themes geared toward impact assessment. Each theme has allied variables as well as key indicators that determine the costs and benefits associated with gambling (Anielski & Braaten, 2008).

The first impact theme is health and well-being which attempts to assess the impact of gambling on the health status and well-being of an individual that participates in gambling. The variable associated with a positive impact, in this case, is the entertainment pleasure that the individual derives from betting. The model points out that there are more cost impacts than beneficial impacts as far as health and well-being are concerned. Cost impacts highlighted in this framework include the problem of gambling prevalence which is defined as a cost to the community and residents as gamblers seek professional treatment for gambling addiction in community-based facilities. The second cost issue is co-morbidity disorders associated with gambling such as mental health problems, anxiety disorders, depression and physical conditions gastro infections, and high blood pressure. Mortality is the third cost attributed to gambling, it includes natural deaths associated with gambling as well as suicides due to gambling prevalence. The final variable related to well-being and health is social relationships which includes separation and divorce cases that negatively affect the children, domestic violence issues, and isolation of gamblers by society members among others (Anielski & Braaten, 2008).

Financial and Economic aspects are the second impact theme contained in the SEIG framework. It highlights the financial and economic consequences of gambling. Just like in the previous case of health and well-being, the financial and economic costs associated with gambling outweigh the benefits. The only

benefit outlined by the framework is the contribution of gambling to economic growth in terms of more investment in hotels and housing as well as increased taxes for the government. The other benefits include personal financial gain for the gamblers that win the prize. Among the cost associated with gambling is personal bankruptcy, this is particularly the case for those gamblers that are constantly losing. Other problems include income lost from missed work and depreciation in the quality of life by gamblers (Anielski & Braaten, 2008).

The third theme is the employment and education variables. The theme points out the potential impact of gambling on socioeconomic welfare. The pros of this theme include employment creation by the gambling industry. On the other hand, the cons are more than the pros, they include; decreased productivity by pathological gamblers in places of work, and employment costs due to possible turnovers in other industries (Anielski & Braaten, 2008).

Sports betting is a form of legalized gambling and it is bound to cause some of the aforementioned effects, even more. It certainly would be beneficial and detrimental to the welfare of the gamblers as highlighted in the SEIG framework. The framework is thus useful in the construction of socio-economic variables used in this study.

3. Methodology
3.1. Study Population
This study analyzed the effects of sports betting participation on youth welfare in Kenya. The sample consisted of youths who live in the Kajiado North constituency because there is a good demographic representation and reflection of the various social-economic profiles in the country and being a metropolitan area houses the different tribes residing in Kenya. The study used primary data to collect data from a target sample of 382 respondents residing in the Kajiado North constituency, Kajiado County. Specifically, the study focused on three cosmopolitan regions, namely Ongata Rongai, Kiserian, and Ngong towns. Out of the sampled 382 respondents the study managed to get responses from 341 respondents, representing a response rate of 89.8 percent. Mugenda and Mugenda (2003) asserted that a response rate of at least 70 percent is considered reasonable to infer from.

3.2. Estimation
The study uses endogenous switching regression to model the welfare effect of sports betting participation among youth. The endogenous switching regression (ESR) model was developed by Lee (1982). It was developed as an augmentation of Heckman's (1979) selection correlation method. ESR is ideal for addressing possible selection bias by considering selectivity as an omitted variable problem (Dutoit, 2007). Akin to the Instrumental Variable (IV) approach, the ESR model assumes the normality of the data and is thus a parametric-based approach. However, a vast literature has shown it to be more efficient than IV (Kassie et al., 2014; Besley & Case, 2017). ESR takes cognizant of the fact that the differences in the welfare outcome between those that take part in sports betting and those that don't may not only be due to observable heterogeneity but also as a result of unobservable heterogeneity. In this regard, ESR is suitable for controlling for the problems of both observable and unobservable endogeneity as it estimates simultaneous equations through Maximum Likelihood estimation (Shiferaw et al., 2014; Kassie et al., 2014; Malikov, Sun & Kumbhakar, 2018).

The simultaneous estimation begins by estimating the participation function. Going back to the theoretical explanations expected that youth would opt to take part in sports betting if they perceive the utility obtained from taking part in sports betting (A_1^*) is higher than the utility obtained from not taking part in betting (A_0^*). Considering that utility is abstract and hence not observable, but taking part in betting is, the decision

to take part is thus regarded as a binary choice. In this case A =1 if $A_1^* > A_0^*$ and D = 0 if $A_1^* < A_0^*$. Thus, the participation decision can be expressed as:

$$A_i^* = Z_i\beta + \varepsilon_i \text{ with } A_i = 1 \text{ } if A_i^* > A_0^*, \text{ otherwise } A_i = 0 \tag{1}$$

Where:

Z represents a matrix of the independent variables,

ß is a vector of parameters estimates and;

ε a vector of the stochastic error term.

Further by following the model presented by (Shiferaw et al., 2014), the current study estimates the ESR model in the following form:

$$\text{Regime 1:} y_1 = X_1\omega_1 + \epsilon_1 \text{ } if \text{ } A = 1 \tag{2}$$
$$\text{Regime2:} y_0 = X_0\omega_0 + \epsilon_0 \text{ } if \text{ } A = 0 \tag{3}$$

Where y_i is a vector of outcome variables signifying outcomes for sports betting participants (y_1) and non-participants (y_0), X_i is a matrix of independent variables, ω_i is a vector of parameter estimates, whilst ϵ_1, and ϵ_0 are stochastic terms.

The stochastic terms from equations 1, 2, and 3 that is ε, ϵ_1, and ϵ_0 respectively are assumed to have a trivariate normal distribution with mean vector zero and the following covariance matrix:

$$cov(\varepsilon, \epsilon_{1,}\epsilon_0) = \begin{bmatrix} \sigma_{\epsilon0}^2 & \sigma_{\epsilon1\epsilon0} & \sigma_{\epsilon0\varepsilon} \\ \sigma_{\epsilon1\epsilon0} & \sigma_{\epsilon1}^2 & \sigma_{\epsilon1\varepsilon} \\ \sigma_{\epsilon0\varepsilon} & \sigma_{\epsilon1\varepsilon} & \sigma_{\varepsilon}^2 \end{bmatrix} \tag{4}$$

where σ_ε^2 is the variance of the selection equation (equation 1), $\sigma_{\epsilon0}^2$ and $\sigma_{\epsilon1}^2$ are the variances of the outcome equations for non-participants and participants while $\sigma_{\epsilon0\varepsilon}$ and $\sigma_{\epsilon1\varepsilon}$ represent the covariance between, ϵ_1, and ϵ_0. If ε is correlated with ϵ_1, and ϵ_0, the expected values of ϵ_1, and ϵ_0 conditional on the sample selection are non-zero:

$$E(\epsilon_1|A = 1) = \sigma_{\epsilon1\varepsilon}\frac{\phi(Z_i\omega_i)}{\Phi(Z_i\omega_i)} = \sigma_{\epsilon1\varepsilon}\lambda_1 \tag{5}$$

$$E(\epsilon_0|A = 0) = \sigma_{\epsilon0\varepsilon}\frac{-\phi(Z_i\omega_i)}{1-\Phi(Z_i\omega_i)} = \sigma_{\epsilon0\varepsilon}\lambda_0 \tag{6}$$

Where ϕ and $-\phi$ are the probability density and the cumulative distribution function of the standard normal distribution, respectively. If $\sigma_{\epsilon1\varepsilon}$ and $\sigma_{\epsilon0\varepsilon}$ are statistically significant, this would mean that the decision to take part in sports betting and the outcome variables (welfare) are correlated indicating that there is evidence of sample selection bias. In this case, an OLS estimation would result in biased and inconsistent estimates. In this regard, Full Information Maximum Likelihood (FILM) is used to fit an ESR that simultaneously yields consistent and unbiased selection and outcome output. The ESR is then used for the comparison of actual expected outcomes of betting participants which are represented in equation 7 and non-participants represented in equation 8. The ESR is further used to examine the counterfactual hypothetical scenarios in that the non-participants took part in sports betting (equation 10) and the participants did not take part in sports betting (equation 11). These equations are as follows:

$$E(y_1|A = 1) = X_1\omega_1 + \sigma_{\epsilon1\varepsilon}\lambda_1 \tag{7}$$

$$E(y_0|A = 0) = X_0\omega_0 + \sigma_{\epsilon0\varepsilon}\lambda_0 \tag{8}$$

$$E(y_0|A = 1) = X_1\omega_0 + \sigma_{\epsilon0\varepsilon}\lambda_1 \tag{9}$$

$$E(y_1|A = 0) = X_0\omega_1 + \sigma_{\epsilon1\varepsilon}\lambda_0 \tag{11}$$

Finally, the Average Treatment Effect of sports betting participants (ATT) is computed as the difference between equations 7 and 8. On the other hand, the average treatment effect of the non-participants (ATU) is given as the difference between equations 10 and 11.

4. Results

This research contextualized that sports betting participation leads to reduced welfare among Kenyan youths. Endogenous switching regression analysis, which has two purposes, was used to test this hypothesis. First, it does a regression to identify the factors that influence sports betting involvement. Constant betting agency advertising, access to technology, and attitudes toward sports betting are among the characteristics that a wide body of research has identified as predisposing factors to sports betting. The model's second section presents the impact of sports betting on youth well-being. Along with other control factors like the youths' gender, age, education level, and work status, it includes the treatment variable—in this case, sports betting participation—as well. The findings are presented in Table 1.

Table. 1: Linear regression with endogenous treatment

Dep: Welfare	Coef.	Std. Err.	z	P>z
Occupation				
Self-employed	0.6854	0.1751	3.91	0.000
employed part-time	0.5765	0.2282	2.53	0.012
employed full time	1.0305	0.1625	6.34	0.000
Education				
Secondary	0.6529	0.1651	3.96	0.000
Undergraduate	0.6828	0.1651	4.13	0.000
Postgraduate	0.4513	0.2187	2.06	0.039
Income	0.5354	0.1979	2.7	0.007
Marital status				
Married	-0.1973	0.1139	-1.73	0.083
Age	0.1002	0.008	11.93	0.000
Betting participation	-1.4971	0.1928	-7.76	0.000
Dep: betting participation				
Advertisement	0.6244	0.2293	2.72	0.006
Technology	0.7700	0.3776	2.04	0.041
Attitude	0.8621	0.3525	2.45	0.014
_cons	-0.8180	0.1382	-5.92	0.000
Hazard				
Lambda	-0.5125	0.1299	-3.94	0.000
Rho	-0.5529			
Sigma	0.9272			
Wild chi2(11)	3850			
Prob>chi2	0.000			
Number of observations	341			

From the first part of the equation with sports betting participation as the dependent variable, it is observed that attitude towards betting is a critical determinant of sports betting participation (β=0.8621, Z-statistic=2.45). Individuals with a positive attitude toward betting are more likely to take part in sports betting participation compared to those who are indifferent towards it. Similarly, the study obtains a positive and statistically significant coefficient for access to technology (β=0.770, Z-statistic=2.04). This indicates that youth with access to technology are more likely to engage in betting activities compared to their counterparts with limited access. Finally, the study establishes a positive nexus between advertisement and sports betting participation (β=0.6244, Z-statistic=2.72).

The second part of the model had youth welfare as the dependent variable. Youth welfare was assessed by asking respondents to estimate their economic, social, and health well-being during the previous year on a scale of 1 to 5. The final assessment of youth well-being was made using an average of the three ratings. From the results, several control variables are significantly linked with youth welfare most notable among them being, Occupation, education, age, and income. In this model, however, the study was more interested in measuring the Average Treatment Effect of sports betting participation on youth welfare. This study obtains a significant and negative coefficient (β=-1.4971, Z-statistic=-7.76). This is indicative that the overall welfare of youth that takes part in sports betting participation is 1.49 percent worse than those that do not take part. This means that the former is worse off with regard to welfare than the latter.

5. Concluding remarks

From the aforementioned discussions, it can be concluded that the study has met its objective of determining the effect of sports betting participation on youth welfare in Kenya. From the first component of the equation, the study concluded that those who believe sports betting to be beneficial are more likely to engage in sports betting than people who do not share this belief. Second, the study found that people who have access to technology for example smart cellphones, internet access, social media, and online betting platforms, are more likely to wager on betting than those who do not. The third finding of the study is that sports betting advertisements influence sports betting.

The second model leads us to conclude that sports betting significantly worsen youth well-being. The welfare index showed that individuals who bet had lower welfare scores than those who did not gamble. Due to the fact that the majority of bettors are in the low-wage bracket, they are more prone to experience depression if their wager does not pay off. This group is also more likely to experience financial hardship, which may eventually have an adverse effect on their overall quality of life, such as making it difficult to access better medical services, restricting mental stability, lacking access to healthy food, and experiencing social deprivation.

In addressing the problem of sports betting among the youth, several interventions that target the drivers of sports betting need to be put in place. Control of gambling-related marketing is one of them. The warning that gambling can be detrimental to a gambler's welfare should be included in all betting commercials. Second, it is important to run awareness campaigns among young people to inform them of the negative consequences of gambling and betting. Marketing efforts, the creation of youth-focused interactive forums, mass media, and social media platforms may all be used to increase consumer awareness. Furthermore, financial literacy education for the youth should be provided. This is essential for young people to manage their finances responsibly and for budgetary considerations.

6. Limitations and suggestion for Future Study

The Kajiado North constituency was the focus of the recent study which is merely a portion of the Kenyan population. Future research should broaden their horizons by concentrating on the entire nation for a larger sample. One of the sources of revenue mentioned by respondents as being utilized for gambling was money borrowed via mobile lending apps. The impact of mobile loan applications on the use of sports betting

should be studied. It is also imperative to research how well gambling laws work to control gambling in the digital age.

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