

European gambling policy

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Regressive gambling taxation in the European gambling market

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- in his very well-known paper in *Journal of Economic Perspectives* (1999), the late Bill Eadington noted that, in terms of public policy formulation, gamblers had second-class status- their consumer demand was not respected, their interests were not taken into account
- this appears almost universally to be the case in Europe and globally: governments typically adopt policies which push up the price of gambling services with the consequence that gamblers have to spend more on and/ or engage less with their preferred use of leisure time
- most obviously, this effect comes from imposing higher taxes on gambling products than on most other consumer goods and services
- for example, Gandullia & Leporatti (2019) reported that 47% of player losses in Italy accrued to Government through taxes, a rate below that for cigarettes but well above that for, say, wine, and very far above that for the generality of consumer goods
- in the UK, Lotto is the most highly taxed product in the economy, with more than 80% of consumers' expenditure claimed by Government through two taxes, one general and one hypothecated

- high gambling taxes are popular with governments (and especially with state governments in federal countries where states have a narrow tax base) because they are likely to meet less voter disfavour than many alternative ways of raising funds
- the distribution of gambling spend is ‘hyper-Pareto’: e.g. in British on-line gambling, 83% of player net losses originate with just 5% of accounts
- so about half of the population don’t gamble and, of those who do, most lose not very much at all to gambling taxes.....for the large majority of voters, better to raise money from the heavy gamblers than to increase general taxes!
- but it is not *only* through explicit taxation that governments act to push up the cost of gambling

- historically, most European countries assigned provision of gambling to a state-owned or state-sanctioned monopolist, which engaged in *monopoly pricing* with profits returned to the state...a form of implicit taxation
- this model hangs on in a few countries but has been weakened over time by the availability of online gambling services provided from outside the jurisdiction and by pressures on countries to respect the European single market
- still, even where the market is opened up and licences granted, *regulatory rules* may still ensure that consumers receive poor value
- in France, sports betting operators are required to distribute no more than 85% of total stakes as winnings- seven operators have been fined this year for breaking the rule
- the rule, which enforces poor value compared with betting in the international market, protects the legacy state operators from competition

- what I have been asked to talk about today relates to whether high explicit or implicit taxes on gambling are equitable, which is one of the criteria by which a tax should be evaluated
- clearly, imposing extra-high taxes on a particular product, in this case gambling, violates the principle of horizontal equity, which is that individuals with the same income should pay similar amounts of tax
- instead, individuals who have a strong preference for gambling services pay more in total taxes than individuals with other preferences even if their income is the same
- but the focus of research tends to be on vertical equity, which is about the burden of taxes on individuals at different points in the income distribution
- in a literature going back to the 1970s, at first mostly focused on American lottery products, it is almost invariably reported that gambling taxes fall unduly on the poor and are therefore **regressive**
- though the literature is about where the burden of tax falls, anti-gambling groups may represent all gambling spend as wasteful and irrational and they might interpret 'regressive' as indicating that the burden of (to them) an illegitimate industry falls on the relatively worse-off

REGRESSIVITY: FORMAL DEFINITIONS

- a tax is **strong-regressive** if individuals with lower incomes pay a higher **absolute amount** to the tax than individuals with higher incomes
- a tax is **weak-regressive** if individuals with lower incomes pay a higher **proportion** of their income to the tax than individuals with higher incomes
- a tax is **progressive** if individuals with lower incomes pay a lower proportion of their income (and therefore a lower absolute amount) than higher income individuals in tax

e.g., a tobacco tax is usually strong-regressive because, on average, lower-income individuals consume a higher amount of the good than higher-income individuals; a general sales tax tends to be weak-regressive because the poor spend all their income on consumption whereas the better-off escape the tax by saving part of their income; and an income tax is usually progressive because of exemption of low incomes from tax and a marginal tax rate which increases with income

- so in which category does gambling taxation fall?
- typically, economists test for the degree of regressivity of a consumption tax by evaluating the **income elasticity of demand** for the product
- this involves modelling demand to assess how spending on the product varies with income
- if income elasticity is <0 , then worse-off individuals actually spend more than the better-off and pay a greater absolute amount in tax (*strong regressivity*)
- if income elasticity is positive but <1 , the worse-off spend less but only a little less than the better off (*weak regressivity*)
- if income elasticity is >1 , the product is consumed significantly less by the worse-off and therefore the burden of the tax falls less heavily on them (both in absolute terms and as a proportion of income) (*progressive*)

- there is a long tradition of such studies, mostly conducted in the US

for **Europe**, and confining ourselves to the **last ten years**, four published studies have followed this track

Luca Gandullia & Lucia Leporatti, Distributional effects of gambling taxes: empirical evidence from Italy, 2019

Tomi Roukka & Anne H. Salonen, The winners and the losers: Tax incidence of gambling in Finland, 2019

James Rude, Yves Surry & Robert Kron, A generalized double-hurdle model of Swedish gambling expenditures, 2014

Dimitri Kohler, On the regressivity of gambling taxes in Switzerland, 2016

- all of these studies investigate the relationship between ‘expenditure on gambling’ and ‘income’ using data from national household budget or gambling prevalence surveys, i.e. they depend on self-report
- three of them make the (sensible) decision to model participation in gambling and level of gambling *separately*:

prob (gambler)= f(log income, controls) whole sample

log (spend)= f(log income, controls) gamblers only

in two of the four papers, the square of log income is also included to allow for the possibility that the effect of proportionate increases in income declines as income increases

- the two-part set-up allows income and other controls to have a different effect on participation versus level of spending- e.g. higher income may not make much difference to an individual’s decision whether or not to take part in gambling but still induce significantly higher spending among those who are gamblers
- information from the coefficient estimates on log income in the two equations are combined to obtain an estimate of income elasticity for gambling, used to evaluate regressivity

results from the European studies

- although the studies use different definitions of individual/ household income, and surveys asked differently worded questions to elicit gambling expenditure, the results were broadly consistent across countries (and consistent with US literature)
- elasticity estimates were in the range +0.1 to +0.6, implying weak regressivity
- one study with a quadratic specification found negative elasticity across the top quintile of the income distribution (a result driven by low participation), suggesting that the very well-off as a group may bear little burden from gambling taxation
- one study has tobacco/ alcohol expenditure as (separate) control variables, with each attracting a positive sign: this implies that those who face the highest burden (relative to income) from gambling taxation also tend to contribute disproportionately to other excise taxes
- the Finnish paper also reports analysis of the geographical distribution of expenditure from hypothecated gambling taxes, finding that affluent counties receive greater benefit (the same as I found in an old paper on projects funded by UK Lotto)...this adds to the general picture that **fiscal arrangements in respect of gambling tend to be highly regressive**

- with this weight of evidence, it is right to accept that a case has been made that gambling taxation is regressive
- however, there are **quibbles**
- the bulk of evidence relies on self-report of gambling spend, which is notoriously unreliable
- the published studies report estimates of income elasticity from coefficient estimates on log income in equations which include *controls* representing socio-economic-demographic status
 - the Swedish paper describes the inclusion of controls as ‘essential’ but in fact I would argue that the estimation should be univariate rather than multivariate
 - e.g. we do not want to predict the increase in spend from a one unit increase in income for an individual who is (say) a graduate....we want to know the relative spend/ tax from individuals at different income levels, regardless of why they have that income level
 - including an education variable may mask the true relationship between spend and income because part of the impact of income on gambling will be attributed to the education variable
 - at most, I would include age as a control since it would correct for younger people recording current income lower than their lifetime average income

- estimation in each study imposes either a linear or a quadratic functional form on the relationship between gambling spend and income
 - I would recommend a flexible functional form, e.g. one could imagine that there is more than one peak in the relationship between gambling spend and income but the functional forms used in the published studies would not capture such a pattern
- most importantly, much of what we would like to know is hidden when individuals' aggregate spending on gambling is modelled
- different products (e.g., sports betting, machine gaming, lottery) typically have different structures of tax and their strongest appeal may lie at different points in the income distribution
- **modelling *aggregate* spend with an inflexible functional form and using unreliable self-report data may cause us to miss some nuances in the relationship between gambling consumption and income**

- **for illustration**, let me show you a couple of things from my recent research output, in both cases employing one year of objective online account data
 - the smaller exercise drew on data from Finland and was specific to the horse betting market
 - we linked two data sets- the first a complete one-year record of every bettor's activity on the online platform of the Finnish monopoly supplier of horse betting services
 - the second, national registry individual data for the whole adult Finnish population
- our research team in Joensuu also links these data to IQ and personality test scores for males who undertook obligatory military service- our main research output is about how IQ predicts betting behaviour....but today I am just showing you our work on income elasticity of demand, which appeared in the journal Economics Letters*
- with the two sources combined, we were able to model the participation decision: among the *whole* Finnish adult population, who bets on the horses?
 - and then we were able to model the relationship between amount spent on horse betting and individual disposable income among those who had betting accounts

what we found

- the marginal effect of disposable income on the probability of being a horse bettor was near zero whether we modelled with or without controls
- that is, horse betting appeared to have the same appeal regardless of income level
- around 12% of accounts won money over the year: since this is negative spending, we excluded these accounts from the amount spent part of the model
- because of losing these observations, we also modelled with amount staked instead of amount spent; the results from the two models proved similar to each other

- when we regressed log spending/ amount staked on log income with controls, we found that, similar to other studies, income elasticity was low (+0.3); when we excluded controls, the estimate increased to +0.5, indicating less severe regressivity (but still regressive)
- we then introduced a flexible functional form, spline regression, which reveals a more subtle relationship between gambling spend and income than in other studies
- in the bottom half of the income distribution, elasticity is quite close to zero: among low- to middle-income horse bettors, income has very little effect on level of spending
- but elasticity in the third quartile is greater and it then reaches about +1 in the top quartile: horse bet spending is appreciably higher among the mid- to upper-income groups- though not overturning the standard regressivity result, this shows that the burden of any taxes may fall not quite so heavily on the poor as might be thought
- another new insight was that, among bettors, income failed to be a predictor of betting frequency: thus, any tendency for spending to increase with income is attributable to increasing intensity rather than increasing frequency

to summarise:

- participation in horse betting is at a similar level across all income groups
 - among horse bettors, increases in income do not predict significant changes in betting spend until relatively high income levels are reached
 - the highest income groups bet more heavily but not more frequently (high stake size)
 - together, these results indicate regressivity, in line with the literature but allow more detailed understanding
 - however, only 2% of adults in Finland have online horse betting accounts and so the effect of horse betting on the *overall* distribution of income in Finland is minimal
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- probably, these results would not generalise to other gambling products: **one should look product-by-product because patterns of preferences may differ as, typically, will the level and structure of taxation**
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- **to illustrate**, I would like to show you the strong contrast between online betting and online slots games in Great Britain (where betting has many more participants but slots provide much higher Gross Gambling Yield)

Patterns of Play Research

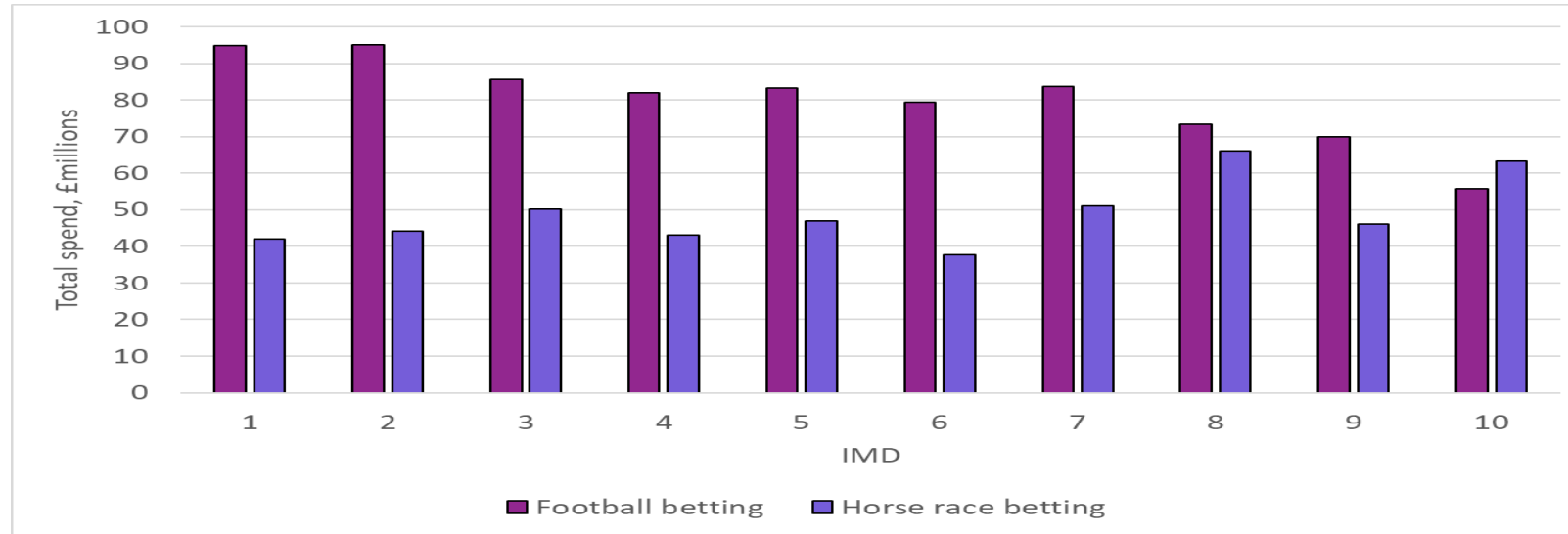
- this project was carried out with my colleague, Professor Ian McHale, as an input into the Government review of gambling legislation and regulation in Great Britain
- we were permitted to sample 20,000 online accounts from each of the seven leading operators (not including the National Lottery)
- this gave us 140,000 accounts; for each account, for one year, we had a record of each gambling transaction, each customer use of safer gambling tools, and any safer gambling operator interventions (more than 1 billion data points)
- each operator offered race and sports betting, slots games, live and simulated casino games, and bingo- for each game type, the age and gender distribution of players was remarkably similar to that shown for land venue participation in prevalence surveys
- our substantial Report covers many topics but here I focus on: **which income groups take part in each of these forms of online gambling and how much do they spend?**

- we did not know the income of any customer whose account we sampled
- however, we did know their postcode from which we could extract information about the immediate neighbourhood where they lived
- Britain is divided into tens of thousands of similarly-sized areas (population c. 1,500) and a Government office assigns an “**I**ndex of **M**ultiple **D**eprivation score” to each one, based on income levels, number of social security claimants, unemployment rate, performance at school, sickness rates, etc
- I will show you **how gambling patterns vary across deciles of neighbourhoods ordered by deprivation score**, from “the 10% most deprived” (IMD1) to “the 10% least deprived” (IMD10)
- neighbourhood type is an imperfect proxy for income- there is a risk of committing the *ecological fallacy* (drawing incorrect conclusions about individuals from group data) but the literature suggests that the risk is mitigated where areas analysed are small in size (as these are)

Patterns of Play: online betting

- because populations in defined neighbourhoods were of similar size, our starting point was to expect 10% of Gross Gaming Yield to originate in each IMD decile
- this was not too far from what was observed: there was only a slight tendency for the most deprived decile to contribute a greater share of GGY than the least deprived decile (10.2% versus 9.4%)....with no particular pattern in-between
- from this, betting looks a pretty classless activity- each type of area, defined by an index of socio-economic status, spends **approximately the same** on online betting (i.e. any tax is weak-regressive)
- however, it is worth mentioning some differences in how this spending is made up

- there was only slight over-representation of deprived areas among customers
- football betting was most strongly favoured by those in the most deprived areas- revenue from horse betting was most in the least deprived areas



- customers in the 20% of **least** deprived areas bet less frequently than anywhere else but with much higher mean stake size (about £22 in IMD10 compared with about £7 in IMD1) and modestly less bad rate-of-return
- in the **least** deprived areas, bettors tended to choose shorter odds than bettors in deprived areas- in the deprived areas, the most popular bet was £5 on a very unlikely-to-win football accumulator (eg predict results of five matches)

Patterns of Play: online slots

- participation in online slots was much lower than in online betting but spend per customer was relatively very high, making this product by far the biggest revenue earner for British online operators
- there was a very striking contrast with betting in terms of the origin of the revenue
- there was only a slight tendency in betting for poorer areas to contribute more to spending than better-off areas
- **but, in slots games, spending was strikingly concentrated in the most deprived neighbourhoods**

- among male slots players, the 10% of most deprived areas accounted for 16% of players whilst the 10% of least deprived areas accounted for only 6%
- among female slots players, the 10% of most deprived areas accounted for 21% of players whilst the 10% of least deprived areas accounted for only 4%
- in each case, the relationship was monotonic across deprivation-deciles: *the poorer the neighbourhood, the higher the participation in online slots*
- *median* (i.e. typical) spending was highest in the poorer areas because of greater frequency of play and longer sessions (and despite lower stake size per spin)
- but *mean* spending was highest at the least deprived end of the spectrum because of the greater presence of extreme spenders (high rollers)

- these subtleties (as well as differences between neighbourhoods in which slots games are played) all feed into the finding that total spending is not monotonically related to deprivation-decile
- but it was clear that the most poor areas spend the most and the least poor areas the least on online slots
- **the most deprived quintile accounted for 26% of aggregate player losses and the least deprived quintile for 14% of player losses**
- this disparity was driven principally by differences in participation across neighbourhood types: the disparity was *even greater* for bingo, but perhaps one should not be as concerned by bingo because the absolute level of spending per year was on average (median or mean) much lower for bingo than for slots
- online casino games featured a somewhat less pronounced concentration in spending than slots but is a smaller product
- across ‘gaming’ as a whole (slots+bingo+casino+poker), the picture painted by the data was that poorer people (proxied by place of residence) spent more than better-off people in absolute terms, not just relative to their income.....**to the extent that taxes are borne by consumers, the implication is that taxes on online gaming are strong-regressive (not just weak-regressive as for betting)**

- in Great Britain, we have no similar spending data for equivalent offline gambling products
- but, from prevalence surveys, patterns of participation for each type of gambling product, by age, gender and socio-economic status, mirror patterns found in the online account data we analysed
- in the latest prevalence survey for England (2021 data) past-year participation in offline machine gaming was 10% for residents of the most deprived quintile of neighbourhoods and only 6% in the least deprived
- if we had spending data as well, we would expect to find the same ‘regressivity’ for machine gaming as in the online slots data
- this was supported by the authors from whom we heard earlier in the conference (Simsek & Weidner, 2023) who, from a pan-European study, showed that, when the income share of the bottom quintile of the income distribution went up/ down, so did the number of gambling machines- presumably a reflection of how preferences for spending on machine games varies across the income distribution

- another study, for Israel by Momi Dahan (2021), examines the spatial distribution of sales outlets for each of the two legal gambling enterprises in Israel: providers of lottery products (including scratchcards) and sports betting products respectively
- the number of outlets is modelled as dependent on area mean income
- typical area (n=1,600) sizes are small (< 1 square km.), making area income a plausible measure to capture regressivity where individual consumption data are not available
- from coefficient estimates, both agencies supplied more outlets in poorer areas
- both forms of gambling were judged 'regressive' but with appreciably lower regressivity in the case of sports betting
- as a sort of falsification test, the same exercise was conducted for Israel's biggest pharmacy chain (perhaps results were associated with cheap shop rents in poorer areas rather than demand)...no relationship with income was found

- this Israeli paper is consistent with the general proposition from a scattered literature that **gambling taxes/ extraction of monopoly rents are highly regressive policies in general but particularly so for games of chance, as opposed to (partly) skilled-based betting**; this is a factor to be taken into account when assessing policy, especially given the different rates and structures of gambling taxes
- if groups which consume products like slots games most heavily face disproportionately high taxation, it should be borne in mind that the pattern of use also implies that they probably get the most benefit from the policy of permitting the activity in the first place

“efficiency” of high taxes on gambling products

- traditional public finance evaluates taxes in terms of ‘efficiency’ as well as ‘equity’
- high taxes are popular with governments because they raise revenue and with anti-gambling interest groups because they punish gamblers (*sumptuary taxation*)
- a more sophisticated approach in favour of high tax argues that gambling features *internalities* (cognitive failures which lead to harm to the gambler) and *externalities* (gambling harm experienced by other parties)
- it is argued that these should be corrected by imposing penal taxes to reduce the total volume of consumption
- explicit comparison is made with high taxes on tobacco and alcohol, which have been justified by their reducing consumption and therefore harm

- I think that these comparisons are misleading
- the harm from alcohol and tobacco is linked to levels of physical consumption; if demand curves are downward-sloping (as they are), then pushing up price will indeed reduce harm to a greater or lesser extent
- but many gambling harms are mediated through financial stress, which implies that what matters for the level of harm is not the *quantity consumed* but rather the *amount spent* (i.e net losses)
- in terms of the language of introductory economics, harm is related to $(P \times Q)$ rather than to Q
- what are the implications?

- for example, if Germany has a $>5\%$ turnover tax on online slots, this translates to a (perhaps much larger) percentage drop in return-to-player, i.e. the mean loss-per-euro-stake (price) is higher than without the tax
- because the product is more expensive for consumers, they will cut back on the quantity of gambling (euros staked) by gambling less frequently and/ or by reducing stake per spin
- whether their **total spending/ loss per period** is higher or lower than without the tax depends **only** on elasticity of demand with respect to price
- if demand is *inelastic*, consumers spend (**lose**) more even though total stakes per period are lower
- **if demand is inelastic, a tax results in gamblers losing more money than in a world without a tax**
- whether a gambling tax increases or reduces harm depends crucially on the value of own-price elasticity of demand
- specifically, we should be interested in the value of elasticity for those who are candidates for incurring harm from gambling

- so, what do we know?
- there is some research on elasticity of demand for gambling (in aggregate or for specific products); it generally finds that elasticity is quite near to unity
- but it is in a subset of consumers that we are particularly interested and we have **no literature** which separates out demand from ‘problem gamblers’
- there are studies in the alcohol field which find that recreational drinkers of at least some products exhibit elastic demand- they are sensitive to value for money and spend and consume less if price is pushed up
- but those with signs of alcohol disorder exhibit inelastic demand: in response to a higher price, they cut back to an extent (which will reduce harm in this case) but not by enough to stop them **spending** more per week on alcohol
- **if** the elasticities told the same story in gambling:
 - recreational gamblers would lose because they were no longer consuming their preferred basket of goods
 - ‘problem gamblers’ would be spending more on their gambling, with harm incurred more rapidly

- making gambling more expensive for the consumer by either fiscal interventions or supply restriction is therefore very far from guaranteed to reduce harm whilst it will result in loss of welfare for consumers who are not candidates for generating harm (though this loss may be small for most as their level of engagement is low)
- in terms of equity, such measures disproportionately extract additional revenue (for governments or for the industry) from the relatively poorly-off though the extent of this regressivity varies according to which gambling activity is considered
- in terms of practicalities of policy, it is also necessary (though not necessarily easy) to take into account the potential for tax (and other measures) to be evaded by consumers migrating activity to the non-regulated, untaxed sector---which, in the current era, mostly amounts to using offshore providers without a licence in the consumer's own jurisdiction

- the scale of the “black market threat” is currently hotly disputed in several European countries
- anti-gambling activists claim that the threat is exaggerated by industry interests to strengthen the case against restrictions on consumption
- regulators, such as in Great Britain, argue that they can prevent most migration to the unregulated sector by IP and payment blocking
- in Germany, there has been substantial enforcement action
- confidence may be misplaced- e.g. there are c. 1,500 German language gambling websites and, if one is shut-down it may reopen with another URL
- extremely large offshore gambling industries exist to serve the American and Chinese markets despite these countries engaging very actively in blocking; the ‘black market’ Citibet exchange is reported to have greater turnover than the Hong Kong Jockey Club

- the key question is not whether there will be illegal supply but whether there will be demand for the unregulated product from consumers who are offered poor value-for-money by legal providers constrained by domestic taxation and regulation
- it appears unlikely that many individuals will seek out unofficial providers because it would not be worth the trouble given that they spend little...sports betting in the mass market flourishes in France despite lower returns-to-player than on the international markets
- but most gambling spend is by a small proportion of very active players and they are much more likely to seek better value outside the jurisdiction- e.g. Finland is to loosen its state monopoly because it is reported that it captures only half of national GGY
- there has been particular emphasis on ‘black market’ threats by horseracing authorities globally: perhaps because its share of GGY depends especially on high rollers at the top end of the income distribution- their departure would aggravate regressivity

- competition from the unregulated sector is a constraint on national governments seeking revenue from high taxes
- it is also argued by the gambling industry that migration of players in response to over-ambitious levels of explicit or implicit taxation would move gambling into a less safe environment
- this seems a strong argument in the case of sport integrity issues because adding liquidity to the unregulated sector, where match-fixers transact, allows fixers to make more profit
- from the perspective of problem gambling issues, how much loss of safety there would be depends on whether the legal industry really protects its players
- perhaps the record of the legal gambling industry is not good enough for many to believe it can be trusted to provide an adequately safe environment anyway

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