INCREASED GAMBLING TAX: HOW ARE TAX REVENUES AFFECTED?

About the impact analysis in the proposal *Höjd spelskatt (Fi2023/02665)*

THE SWEDISH TRADE ASSOCIATION FOR ONLINE GAMBLING

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The Swedish Government has proposed to increase the Swedish gambling tax from 18 to 22 percent[1] with the stated purpose to increase tax revenues. The Ministry of Finance has estimated that the new gambling tax will increase net tax revenues[2] by SEK 539 million per year from 2025 and onwards.

The tax impact on public finances is estimated according to the Ministry of Finance's calculation principles[3]. On the one hand, the purpose of these principles is to provide a transparent and fair account of how tax changes affect State finances. On the other hand, the principles also allow for simplified assumptions and adjustments for direct effects and some indirect effects of taxation. Hence, the precision of the estimated impact depends on if used assumptions and made adjustments reflect the actual outcome of the new tax.[4]

In the context of the proposed tax increase, the Ministry of Finance has made three adjustments for:

- a reduction in the tax base due to higher prices[5],
- no tax effect for state-owned Svenska Spel[6], and
- lower corporate tax revenues from ATG[7].

We consider these adjustments to be relevant. However, we have three comments to the adjustments made and the effects taken into consideration:

1. **The tax base adjustment is based on an assumption of inelastic demand**. The proposal assumes a price elasticity of demand of -0.5 (inelastic demand) for all types of games. The price elasticity estimate is based on SOU 2017:30. However, this report actually concluded the opposite: "*Most assessments of price elasticities shows that players are relatively price sensitive, i.e. the price*

[1] PM (9 October 2023) *Höjd spelskatt (Fi2023/02665)* [Link].
[2] The net tax revenue is calculated as: Net tax revenue = Gross tax revenue - Direct effects - Indirect effects.
[3] *In Swedish: Beräkningskonventioner,* see Finansdepartementet (2023) *Beräkningskonventioner 2023* [Link].
[4] Finansdepartementet (2023) *Beräkningskonventioner 2023*, p.15 [Link].
[5] The Ministry of Finance assumes that the tax increase will result in higher prices that will lower demand for gambling. The combined effect on demand depends on the assumed price increase and the price elasticity (sensitivity).
[6] Since Svenska Spel is state-owned, the higher tax revenues will be proportional to the lower surplus (and therefore dividends) for the state.
[7] ATG is located in Sweden and must pay corporate tax in addition to the gambling tax. Since an increase in the gambling tax lowers the profit before tax, the tax base for corporate taxation will be lower after the gambling tax increase.

elasticity [of gambling] is lower than -1". Assuming a less elastic demand will understate the demand effect on the tax base.

2. **The tax base adjustment does not account for switching to unlicensed sites (lower channelisation).** The proposal acknowledges that "*The channelisation rate, [..] is expected to be negatively impacted as gamblers to some extent can be expected to adapt its behaviour to the higher price level.*"[8] Not properly accounting for the Swedish context, where competition between licensed and unlicensed operators is significant, will also understate the demand effect on the tax base.

3. **No consideration is taken to the link between unlicensed gambling and problem gambling.** The proposal does not consider the indirect effects on problem gambling from lower channelisation. Licensed operators need to meet the requirements of the duty of care (sv. *omsorgsplikten*) while unlicensed operators do not. Hence, it can be expected that problem gambling would be more severe with lower channelisation. Not including societal costs of problem gambling will overstate the revenue effect of the tax.

In this paper, we investigate how adjusting for these three effects impact the magnitude of the estimated net tax revenues. We do so by first revisiting the regulatory trade-off when setting the tax rate in gambling markets. We then quantify the effect of the adjustments based on publicly available data, relevant literature, and interviews with licensed providers of online casino and sports betting.

Our analysis shows that the net tax effect is 26-60 percent lower than estimated by the Ministry of Finance when the adjustments are accounted for. This means that the new gambling tax is expected to generate yearly net tax revenues of SEK 214 to 399 million, see Table 1.[9] The size of the adjustment reflects the uncertainty related to the degree of switching to unlicensed sites following the tax increase.

Table 1: Our estimate of the yearly expected net tax revenues

ADJUSTMENTS TO THE GROSS TAX REVENUE	MINISTRY OF FINANCE*	COPENHAGEN ECONOMICS***
A. Gross tax revenue	953 mSEK	953 mSEK
B. Tax revenue does not increase for Svenska Spel	-343 mSEK	-343 mSEK
C. Lower tax revenue via corporate tax for ATG	-45 mSEK	-45 mSEK
D. Tax effect of lower demand	-26 mSEK**	-107 mSEK
E. Tax effect of switching to unlicensed sites	-	-40 to -203 mSEK
F. Tax effect of extra costs for problem gambling	-	-19 to -41 mSEK
Expected net tax revenue	**539 mSEK**	**214 – 399 mSEK**

Note: *Adjustments to the Ministry of Finance's calculations are based on our understanding of the information presented in the memo for the proposed tax increase. **B** is calculated as *Gross tax revenue×Svenska Spel's market share (36%)*. **C** is calculated as *Gross tax revenue×ATG's market share (23%)×Corporate tax (20.6%)*. ** The Ministry of Finance has not verified the magnitude of the demand impact. Consequently, our replication of the Ministry of Finance's calculation regarding the tax effect of decreased demand has been determined as the residual. *** **D** concerns our adjustment of the price elasticity used by the Ministry of Finance, see Chapter 2. **E** concerns our adjustment of the price elasticity referred to in the literature for switching to unlicensed sites in the Swedish context, see Chapter 3. **F** concerns our estimate of the extra costs of problem gambling due to switching to unlicensed sites, see Chapter 4.
Source: Copenhagen Economics based on the data described in chapters 2 to 4.

[8] PM (9 October 2023) *Höjd spelskatt (Fi2023/02665)*, p.10 [Link].

[9] We present the result as an interval. This interval reflects the uncertainty involved in adapting external estimates to the context of the Swedish gambling market.

We draw the following conclusions from our analyses:

- *The tax base adjustment should be based on elastic demand and a pass-on rate below 100 percent*
  Relevant literature suggests that the price elasticity of demand for gambling is less than -1 and varies by type of game. The applied price elasticity by the Ministry of Finance is well below estimates (less elastic) found in the literature. However, even when aligning the price elasticity with estimates found in the literature, these estimates are unlikely to be representative to a Swedish context. This is due to the fact that the studies were conducted before the market shifted towards online gambling and concerns countries with less competition from unlicensed operators.

  When assessing the tax impact related to a price increase, it is also relevant to consider the degree of pass-on. Generally, a higher pass-on rate means the burden shifts more to consumers, leading to a more significant demand adjustment. The Ministry of Finance assumes that the entire cost increase from the tax will be passed-on to consumers. However, this is not in line with the interview responses by licensed operators, who expect to pass-on some but not all costs to consumers. Further, theoretical economic predictions suggest that the pass-on rate is below 100 percent but above 50 percent. This is also in line with the few empirical studies of pass-on in gambling markets.

- *Substitution to unlicensed sites warrants a higher price elasticity*
  Unlicensed sites exert competitive pressure on licensed operators, in particular for casino and sports betting. Hence, the price elasticity for casino and sports betting should be higher due to the competitive constraint from unlicensed sites. The existing elasticity estimates fail to account for such competition. This is based on the fact that the Swedish market exhibits lower channelisation levels for casino and sports betting, combined with a less competitive licensed market due to restrictions on gameplay and promotions.

- *A small increase in problem gambling leads to significant extra societal costs*
  Problem gambling imposes substantial societal costs of around SEK 11.5 billion annually.[10] Since the responsible gambling measures, such as the duty of care, only concern licensed operators, it can be expected that costs associated with problem gambling are (relatively) higher among consumers that are active on unlicensed sites. Given our approach, we estimate that an increase in the number of individuals with gambling problems (0.17 to 0.35 percent), stemming from switching to unlicensed operators following the tax increase, leads to an increase in extra societal costs of problem gambling by SEK 19 to 41 million annually.

Besides accounting for these adjustments, we also recommend that future impact analyses of tax interventions in the gambling market should account for that the gambling market exhibits differentiated price sensitivity among different types of games. Further, we also stress the importance of the regulatory context for tax impact assessments, as the competitive situation between licensed and unlicensed operators is likely to differ by market.

If these features of the gambling market are not taken into account, it is likely to lead to inaccurate predictions about the revenue upside (downside) of a tax change.

[10] Includes direct, indirect and intangible costs for 2021, see The Public Health Agency, *Societal costs of problem gambling* [Link] and Hofmarcher, T., Romild, U., Spångberg, J., Persson, U., & Håkansson, A (2020) *The societal costs of problem gambling in Sweden*. BMC public health, 20(1), 1-14.

CHAPTER 1: REGULATORY CONSIDERATIONS WHEN SETTING THE TAX RATE

The case for a regulated gambling market is clear: control of the gambling market can both ensure tax revenues being channelised into the licensing system and allow for a safe gambling environment to curb gambling addiction.

However, in practice, achieving these objectives represents a regulatory trade-off due to competition from providers outside the licensing system.

Regulation affects the competitiveness of licensed operators

In the Directive[11] for introducing the Swedish licensing system for gambling, two main objectives were expressed: *first,* generate revenues to the funding of state operations via the gambling tax, and *second,* channelise demand for gambling to safe and controlled offers.

These objectives pose the following regulatory trade-off:

- A low tax rate would make it more attractive to operate within the licensing system, as it levels the playing field with unlicensed providers who do not pay the tax. However, it also generates less tax revenues from licensed providers.

- A high tax rate would make it more costly to operate within the licensing system, which in turn provides a comparative advantage for unlicensed operators. However, it also generates more tax revenues from licensed providers.

The choice of tax rate should balance the risk of eroding the tax base to unlicensed providers with additional revenues generated from licensed providers.

In this balancing act, proposals to adjust the gambling tax should further consider other factors that impact competitiveness vis-à-vis unlicensed sites, such as:

- Restrictions on marketing,
- Restrictions to gameplay (e.g. time controls, deposit limits),
- Restrictions on offerings (e.g. bonuses, special offers),
- Technical restrictions to prevent unlicensed operators from entering the market,
- Other administrative costs (compliance costs, costs of acquiring a license).

In the context of competition with unlicensed sites, these factors affect the relative competitiveness of licensed operators. For example, technical restrictions to access unlicensed sites improves competitiveness of licensed alternatives as it improves the relative availability of licensed sites. Similarly, restrictions on offerings, e.g. bonuses, reduce competitiveness of licensed alternatives as it improves the relative attractiveness of unlicensed sites.[12]

Depending on the regulatory context, a tax change may thus contribute less or more to the overall competitiveness of licensed operators. This can be particularly important when comparing outcomes between licensing systems in different countries.[13]

Channelisation level as an indicator of competition from unlicensed sites

In the memorandum, the Ministry of Finance explicitly articulates the need for caution when setting the tax rate, highlighting potential adverse effects on the channelisation and tax revenue:

"[*t]here are still reasons for some caution when determining the tax level. This is because it cannot be ruled out that a significant increase in gambling tax, for example, with a tax rate amounting to 30 percent, could*

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[11] Kommittédirektiv, *Omreglering av spelmarknaden*, Dir. 2015:95, p. 1 and 7 (freely translated by Copenhagen Economics).

[12] See Copenhagen Economics (2020) *The degree of channelization on the Swedish online gambling market*, for an assessment of competition between licensed and unlicensed sites.

[13] In 2021, Denmark increased its online gambling tax rate from 20% to 28%. Despite the difficulty in assessing the impact of the tax increase in isolation, tax base data suggest that the impact was relatively modest. However, we note that the regulatory context differs significantly between Sweden and Denmark. The Danish gambling market exhibits a higher degree of maturity, primarily due to Denmark introducing its licensing system seven years earlier, in 2012. Furthermore, Denmark's approach to bonuses is notably less restrictive, complemented by more advanced measures in limiting access to unlicensed providers.

have a noticeable effect on both channelisation and on the tax revenues from gambling in Sweden".[14]

Caution is warranted because an excessive tax rate can lead to an unfavourable market situation where licensed companies find it difficult to compete with unlicensed operators' offerings. This, in turn, can increase the proportion of unlicensed gambling and decrease the market shares of licensed operators. An excessive gambling tax can also lead to a situation where it exacerbates gambling-related harm by increasing gamblers' losses.[15]

In the Swedish context, it is relevant to consider that, after introducing the licensing system, challenges have remained with competition from operators outside the licensing system:

- A significant portion of gambling activity in Sweden continues to be conducted through gambling companies without a Swedish license.[16]
- Channelisation rates for casino and sports betting are reported at levels between 72 to 80 percent.[17]
- Recent estimates from ATG suggests a declining trend in Sweden's channelisation rate over the past few years.[18]

The level of channelisation can be seen as an indicator of competition from unlicensed operators. For Sweden, the lower levels of channelisation for casino and sports betting suggest that unlicensed providers are particularly competitive for those types of games.

Through which mechanism can a tax change affect tax revenue?

Evaluating the effects of the proposed tax increase on consumers demand requires an assessment of consumer price sensitivity. This sensitivity determines how consumers adjust their behaviour in response to price changes.[19] Price sensitivity of consumers is commonly measured by the price elasticity of demand (PED), which measures how the quantity demanded of a good or service changes in response to a change in its price.[20]

Generally, the effect of a tax increase is influenced by both the size of the price increase and how consumers adjust their behaviour to the new price:

- **Inelastic demand (PED < 1):** Increasing taxes on goods with low price elasticity has a lower impact on demand. In this case, raising taxes is less distortive because consumers continue to buy these goods to a similar extent, even with higher prices.

- **Unit elastic demand (PED = 1)**: Increasing taxes on goods with unit price elasticity leads to equal percentage changes in both demand and price. In this case, price increases resulting from a tax adjustment affect demand proportionally to the change in prices.

- **Elastic demand (PED > 1)**: Increasing taxes on elastic goods has a higher impact on demand. In this case, raising taxes is more distortive because consumers will reduce consumption significantly, which in this context may erode the tax base.

For gambling markets, the total reduction in demand following a price increase can be split into two main effects:

A. Reduction in licensed gambling (less or no gambling).
B. Switching to unlicensed sites.

The cumulative direct effect of these adjustments to consumer behaviour can thus be quantified as:

A + B = Total reduction in demand

Thus, for a given price elasticity, a portion of the reduction in demand is attributable to the price sensitivity related to licensed and unlicensed substitutes (B). If a given price elasticity fails to account for the specific

[14] PM (9 October 2023) *Höjd spelskatt* (Fi2023/02665), p.7 [Link].
[15] Newall, P., & Rockloff, M (2022) *Risks of using taxation as a public health measure to reduce gambling-related harms.*
[16] Statskontoret (2022*) Utvärdering av omregleringen av spelmarknaden – Slutrapport 2022:5*, p.10 [Link].
[17] Copenhagen Economics (2020) *The degree of channelization on the Swedish online gambling market.*
[18] ATG (2023) *Olicensierat spel – En analys av webbtrafik till olicensierade spelsajter*, p.10 [Link].
[19] The Government (2017) *A deregulated gambling market*, p.491 [Link].
[20] Mankiw, N. G (2020) *Principles of Economics.*

price sensitivity related to licensed and/or unlicensed gambling, it may result in inaccurate predictions concerning the potential gains (or losses) associated with a tax adjustment.

CHAPTER 2: MEASURING THE EFFECT OF REDUCED DEMAND DUE TO HIGHER PRICES

In general, an increase in prices leads to a negative impact on the quantity of goods and services demanded, resulting in a decrease in the tax base and in turn tax revenues.

Accounting for the tax impact on consumer prices has two main components: (i) the price elasticity of demand and (ii) the degree of pass-on to consumers. In this chapter, we appraise the assumptions made by the Ministry of Finance for these two components. We then provide our estimate of the tax impact on demand following higher prices for gambling.

How price sensitive are consumers?

The Ministry of Finance assumes a price elasticity of demand of -0.5 (inelastic demand). This assumption is based on the literature review presented in the Swedish Government Official Reports (SOU 2017:30). However, the report shows significant variation in price elasticities for different types of gambling, ranging from -0.5 to -3. The report also concludes that "*Most assessments of price elasticities shows that players are relatively price sensitive, i.e. the price elasticity [of gambling] is lower than -1*".[21]

While we acknowledge the considerable variation in estimated price elasticities of demand for gambling, most assessments show that consumers are relatively price sensitive, as supported by the underlying report[22] from 2014 studying price elasticities in the UK market. The report shows a broad range of price elasticities, from -0.5 to -1.5, where the variation is tied to the type of game. For example, online casino has the highest price elasticity of -1.5, which for context would mean that (in isolation) the assumed price elasticity in the Ministry of Finance's calculation underestimates the tax base effect for casino consumers by an order of magnitude of three.

The Ministry of Finance appears to have chosen the most inelastic estimate found in the report, i.e. -0.5 estimated for pool games, land-based casinos (terrestrial gaming), commercial gaming (terrestrial gaming), and online betting (remote betting). From the report, it also follows that these estimates are not statistically significant[23], which would warrant the use of a more conservative (not understating) price elasticity.

Our proposed adjustment is to use a weighted price elasticity of demand for the entire market. Consequently, we use the estimates pertaining to the UK market in 2014 and calculate a weighted price elasticity of demand for all gambling in types in Sweden. Based on the proportion of gambling for the categories, we calculate a revised price elasticity estimate of -1.04, see Table 2.

[21] SOU 2017:30 Del 1. *En omreglerad spelmarknad,* p.492–493 [Link].
[22] Frontier Economics (2014) *The UK betting and gaming market: estimating price elasticities of demand and understanding the use of promotions.*
[23] Frontier Economics (2014) *The UK betting and gaming market: estimating price elasticities of demand and understanding the use of promotions*, p.39.

Table 2: Weighted price elasticity of demand

TYPE OF GAME	UK 2014 ESTIMATES*	CE REVISED ESTIMATES	WEIGHT***	WEIGHTED PED
A. Online casino	-1.5	-1.5	28%	-0.42
B. Online betting	-0.5	-1	25%	-0.25
C. Lotteries (incl. scratch cards)**	-1	-1	24%	-0.24
D. Pool games, land-based casinos, and commercial gaming	-0.5	-0.5	21%	-0.11
E. Terrestrial betting	-1	-1	2%	-0.02
Weighted average	**-**	**-**	**100%**	**-1.04**

Note: The weighted PED is calculated as the product of '**CE revised estimates**' and '**Weight**'. The weighted average is calculated as the sum of **A** to **E**. * We observe that estimated PED for online casino, pool games, land-based casinos, and commercial gaming are statistically insignificant. Consequently, for Online betting, we rely on the estimate for Terrestrial betting for our application of existing estimates in a Swedish context. ** We use the average between lottery (draws), lottery (scratch cards), and Gaming machines.

Source: Copenhagen Economics based on data from: (i) Frontier Economics (2014) The UK betting and gaming market: estimating price elasticities of demand and understanding the use of promotions. *** Weights are based on data from: (i) Quarterly statistics reported by the Swedish Gambling Authority (2022), (ii) annual records by ATG and Svenska Spel, and (iii) and Copenhagen Economics (2020) *The Degree of Channelisation on the Swedish Online Gambling Market*.

What determines pass-on of the added costs due to a higher tax rate?

The Ministry of Finance assumes that the costs of taxation will be fully transferred to consumers through higher prices.[24] However, based on interviews with licensed operators this assumption is likely to overstate the pass-on rate to consumers (and, in isolation, understate net tax revenues).

Hence, we have made an independent appraisal of the degree of pass-on based on interviews with licensed operators and considerations from economic theory and the economic literature. More specifically, we have addressed the validity of the full pass-on assumption and sough to inform on the magnitude of price increases to cover the added costs.

First, three observations about pass-on are particularly relevant from the interviews with the licensed operators:

- Larger operators with sufficient economies of scale (volumes) have a better ability to absorb the added costs of taxation.
- Smaller operators will have to pass-on on the full amount to operate at a positive margin, otherwise they will have to exit the market.
- Most operators expressed a limited ability to raise prices, i.e. in the form of lower return to player (RTP) for casino and a higher overround[25] margin for sports betting, because it would risk losing consumers to the unlicensed market.

Second, economic theory predicts market competition affects ability to raise prices (pass-on). In a perfectly competitive market, we anticipate that the cost increase of a tax adjustment will be fully passed on to consumers. Conversely, in an imperfectly competitive market, the price adjustment may vary, reflecting the degree of market power and competitive dynamics.

Further, the extent to which costs are passed on also depends on the proportion of the market affected by the cost increase.[26] If the entire market is impacted, and competition is strong, the pass-through of costs would be complete. If only one market player is affected, there would likely be no pass-through.

[24] PM (9 October 2023) *Höjd spelskatt (Fi2023/02665)* [Link].
[25] Overround is a percentage profit margin added to the probability of the outcome of a sports (or betting) event.
[26] Genakos, C., & Pagliero, M (2022) *Competition and pass-through: evidence from isolated markets*.

When a segment of the market experiences a cost increase while another does not, the degree of pass-through can be expected to fall between these two extremes. For instance, licensed gambling is subject to the same cost increases, whereas unlicensed gambling faces no such price adjustments. Therefore, the extent of cost pass-through depends on the competitive interplay between licensed and unlicensed gambling sectors.

In terms of empirical studies on pass-on in gambling markets, a recent working paper studying the pass-on rate in the German gambling market following a tax increase for online sports betting finds that consumers absorbed on average 76 percent of the tax burden.[27]

Consequently, considering the competitive pressure from unlicensed operators in the Swedish gambling market, we assume that 60 percent of the proposed gambling tax increase will be passed on to consumers in the form of higher prices. We consider this assumption to be conservative in comparison to the assumption used by the Ministry of Finance and reasonable given the economic theoretical predictions and existing empirical studies of pass-on in the gambling market.

Our estimate of the tax revenue adjustment is SEK 107 million

Based on our assessment of the weighted price elasticity and pass-on, we estimate the tax revenue adjustment due to decrease in the tax base following the tax increase.

Our estimate is that the gross tax revenue should be **reduced by SEK 107 million,** see Table 3. We use the same tax base as the Ministry of Finance in its memo and assumes that the four percent tax increase will increase prices by four percent.

Table 3: Tax revenue adjustment from lower gambling demand

PARAMETER	VALUE
A. Tax base	23 825 mSEK
B. Price elasticity of demand	-1.04
C. Price increase	4%
D. Price pass-through	60%
E. Tax-rate before increase	18%
Net decrease in tax revenue	**107 mSEK**

Note: The net decrease in tax revenue is calculated as the product of parameters **A** to **E**.

Source: Copenhagen Economics based on estimates from (i) Frontier Economics (2014) *The UK betting and gaming market: estimating price elasticities of demand and understanding the use of promotions* and (ii) interviews with licensed operators.

This adjustment only corrects for the applied price elasticity from the UK report. However, the weighted price elasticity still reflects UK market conditions in 2014, which are unlikely to be reflective of Swedish market conditions in 2024. In particular, the Swedish market exhibits more competitive pressure from unlicensed operators. Acknowledging this limitation, we proceed in the next chapter to adjust these estimates to account for switching to unlicensed sites.

CHAPTER 3: ACCOUNTING FOR SWITCHING TO UNLICENSED SITES

Since the introduction of the Swedish gambling market in 2019, the channelisation rate has been a key metric of the regulated market's effectiveness in attracting and retaining consumers within its licensing system. Recent studies have found channelisation rates well below the target of 90 percent, in particular for casino and sports betting.[28]

In its proposal, the Ministry of Finance acknowledges that "*The channelisation rate, [..] is expected to be negatively impacted as gamblers to some extent can be*

[27] Kasinger, J (2022) *Shrouded sin taxes*.

[28] See for example, Copenhagen Economics (2020) *The degree of channelization on the Swedish online gambling market* [Link] and ATG (2023) *Unlicensed Gambling: An Analysis of Web Traffic to Unlicensed Gambling Sites*, p.10 [Link].

expected to adapt its behaviour to the higher price level."[29]

Despite this acknowledgement, the proposal does not account for the tax revenue impact of lower channelisation. The most direct way of accounting for lower channelisation, in the form of more increased unlicensed gambling, is to use a price elasticity that accounts for switching to unlicensed alternatives. The used price elasticity underestimates the price sensitivity of consumers in relation to unlicensed alternatives.

In this chapter, we qualitatively reassess the (benchmark) elasticity estimates in the previous section by adjusting them for the current Swedish context with higher degree of substitution between licensed and unlicensed sites.

The case for adjusting the benchmark estimate to a Swedish context

To our knowledge, there no recent studies specifically examining the price elasticity of demand within the Swedish gambling market.

Hence, we use the UK report as the basis for our assessment. We consider that the estimates in the report are unlikely to reflect the price elasticity in the Swedish market related to competition from unlicensed operators for three main reasons.

First, the market structure has shifted from land-based gambling to online gambling since the publication of the UK report ten years ago. At that time, online gambling accounted for roughly 10 percent of the total UK market compared to 43 percent today.[30] For comparison, the estimated share of the online market in Sweden is currently at around 65 percent. The online market transition has increased competition from unlicensed sites.[31]

Second, the prevalence of unlicensed gambling alternatives was lower in the UK in 2014. For example, in its annual report for 2014/2015, the UK Gambling Commission states that "*As far as unlicensed activity is concerned, we have found no evidence of the threatened move underground or emergence on any scale of illegal websites targeting Britain. Of the small number of illegal operators identified, some responded immediately to our request to stop operating, while others have been cut off from accessing the British market by the main payment providers and advertising platforms*."[32] Further, the UK is known for consistently ranking at the top in terms of channelisation rates, considerably above Sweden.[33]

Third, the regulatory context in Sweden today differs from the UK in 2014. In our interviews with licensed operators, most responded that competition from unlicensed operators was the main reason for not passing on the full cost of tax increase. A key factor mentioned for the lack of competitiveness from licensed sites is the relatively strict regulation in Sweden compared to other jurisdictions (including the UK in 2014), e.g. by not allowing promotions, restrictions on gameplay etc. While the objectives of such regulatory measures are designed to support the duty of care, it may also exacerbate the competitive wedge to unlicensed sites.

On the basis of this qualitative assessment, we apply an interval of adjusted price elasticities for casino and sports betting to account for the price sensitivity related to substitution to unlicensed sites. We consider a range of price elasticities up to a weighted price elasticity of -3, which is the highest price elasticity identified in the Government Official Reports (SOU 2017:30). This in turn entails adjusted price elasticities for casino and sports betting of -2 to -5, see Table 4.

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[29] PM (9 October 2023) *Höjd spelskatt (Fi2023/02665)*, p.10 [Link].

[30] Between April 2013 and March 2014, online gambling accounted for roughly 10% of the total UK gambling market. This contrasts significantly with the present, where online gambling comprises 43% of the market. Gambling Commission (2024) *Industry statistics – February 2024 – Correction* [Link].

[31] In Copenhagen Economics (2020) *The degree of channelization on the Swedish online gambling market* [Link], we outline a framework for assessing competitiveness of unlicensed sites vis-à-vis licensed alternatives for different gambling verticals. The dimensions considered, availability, similarities, ease of entry, attractiveness, can be expected to have improved as a result of the market transitioning online.

[32] UK Gambling Commission (2015) *Annual Report & Accounts*, p.18 [Link].

[33] See European Commission (2017) *Preventing Criminal Risks Linked to the Sports Betting Market* [Link] and Spillemyndigheten (2021) *Report on illegal gambling 2021* [Link].

The interval reflects the uncertainty in measuring the added price elasticity related to switching to unlicensed sites in the Swedish market.

Table 4: Weighted price elasticity of demand when accounting for switching

TYPE OF GAME	ADJUSTED PED
A. Online casino	**-2 to -5**
B. Online betting	**-2 to -5**
C. Lotteries*	-1
D. Pool games, land-based casinos, and commercial gaming	-0.5
E. Terrestrial betting	-1
Weighted average*	**-1.43 to -3.01**

Note: The weighted average is calculated by summing the products of the price elasticities of demand, ranging from **A** to **E**, and their corresponding weights as detailed in Table 2. * We use the average between lottery (draws), lottery (scratch cards), and Gaming machines.
Source: Copenhagen Economics based on estimates from Frontier Economics (2014) *The UK betting and gaming market: estimating price elasticities of demand and understanding the use of promotions*.

Our estimate of the tax revenue adjustment is SEK 40 to 203 million

Given our appraisal of existing estimates, we estimate the tax revenue impact of lower demand due to higher prices based on a price elasticity of demand between -1.43 to -3.01.

Based on the tax base for 2022, we estimate that the impact on tax revenues, due to a lower tax base, would be between **SEK 40 to 203 million**, see Table 5.

Table 5: Tax revenue adjustment from lower gambling demand

PARAMETER	VALUE
A. Tax base	23 825 mSEK
B. Price elasticity of demand	-1.43 to -3.01
C. Price increase	4%
D. Price pass-through	60%
E. Tax-rate before increase	18%
F. Net decrease in tax revenue (UK estimate)	107 mSEK
Net decrease in tax revenue (adjusted estimate)	**40 - 203 mSEK**

Note: The net decrease in tax revenue (adjusted estimate) is calculated by subtracting **F** from the product of parameters **A** to **E.**
Source: Copenhagen Economics based on estimates from Table 4.

CHAPTER 4: EXTRA COSTS ASSOCIATED WITH PROBLEM GAMBLING

Problem gambling constitutes a significant public health concern, impacting individuals and imposing substantial costs on the Swedish society.[34] In 2021, the estimated societal cost of problem gambling in Sweden amounted to approximately 11.5 billion SEK.[35]

Since measures for responsible gambling, such as the duty of care, only concern licensed operators, it can be expected that costs associated with problem gambling are (relatively) higher among consumers that are active on unlicensed sites.

While the adverse implications stemming from increased participation in the unlicensed market are recognized by, e.g. the Swedish Agency for Public Management[36], the Ministry of Finance do not consider such indirect effects. Hence, in this section we estimate two effects: (i) the decrease in channelisation, and (ii) the

[34] Hofmarcher, T., Romild, U., Spångberg, J., Persson, U., & Håkansson, A (2020) *The societal costs of problem gambling in Sweden.*
[35] The Public Health Agency (2021) *Societal costs of problem gambling* [Link].
[36] See for example: "*The Swedes' gambling with gaming companies without a Swedish license likely means both increased gambling problems and lost tax revenues*". Statskontoret (2022*) Utvärdering av omregleringen av spelmarknaden – Slutrapport 2022:5*, p.29 [Link].

increase in costs for problem gambling following the tax increase.

We estimate that the tax increase will reduce channelisation by 1.2-2.5 percentage points

To assess the extra costs associated with problem gambling, we rely on estimates for the decrease in the tax base that switches to unlicensed operators following the tax increase. This switching is expected to decrease the channelisation level.

Given the challenge in assessing the decrease in the tax base that shifts to unlicensed operators, and its impact on channelisation, we use our estimates of the tax base reduction following the tax increase.

Our estimates are based on the estimated 3.4-7.2 percent decrease in the tax base following the tax increase. We assume that 30 percent of this decrease will transition to the unlicensed market. We estimate that this corresponds to a decline in the channelisation rate of approximately 1.2-2.5 percentage points.

What is the annual cost for individuals with gambling problems?

The cost to society per individual affected by problem gambling varies with the severity of their gambling problems. Typically, the gravity of gambling problems is segmented into three categories: (i) low-risk problem gambling, (ii) moderate-risk problem gambling, and (iii) serious problem gambling.

For our analysis we use the annual cost related to low-risk problem gambling of around 33 000 SEK per year.[37] Considering the substantial increase in costs for more severe forms of problem gambling, our approach is conservative as we rely on the yearly expenses associated with low-risk problem gambling.

We estimate that 2 881 to 6 085 consumers will switch to unlicensed alternatives

To calculate the increased costs associated with problem gambling following the proposed tax increase, we first estimate the number of individuals who will switch to the unlicensed gambling market following the tax increase. Our approach determines the number of individuals who will switch to unlicensed gambling based on the estimated number of gamblers on the unlicensed market at tax rates of 18 percent and 22 percent. We account for that the amount wagered can be assumed to be on average higher on the unlicensed market to calculate the number of consumers who will switch to unlicensed alternatives.

Building on the estimated decrease in the tax base that shifts to unlicensed operators, we calculate that 2 881 to 6 085 individuals will shift from licensed to unlicensed gambling because of the proposed tax increase, see Table 6.

Table 6: Number of individuals who will switch to unlicensed gambling

PARAMETER	VALUE
A. Decrease in the tax base that shifts to unlicensed operators	245 – 517 mSEK
B. # of gamblers in Sweden	1.40 m
C. Average bet size per year (licensed)*	16 975 SEK
D. Average bet size per year (unlicensed)	84 875 SEK
# of individuals who will switch to unlicensed gambling	**2 881 – 6 085**

Note: The number of individuals who will switch to unlicensed gambling is calculated as **A** divided by **D**. * We assume that the average bet size in the unlicensed market is 5 times greater than in the licensed market. We calculate the average bet size in the licensed market by dividing the affected tax base with the number of individuals who gambled monthly in 2021.

Source: Copenhagen Economics based on (i) 2022 population data from SCB, and (ii) the share of individuals in Sweden who gambled every month in 2021.

[37] Gustafsson, A., Hjalte, F., & Hofmarcher, T (2023) *Samhällets kostnader för spelproblem i Sverige 2021–En uppdatering*.

We estimate that 591 to 1 247 individuals developing gambling issues

Based on the estimated number of individuals who will switch to unlicensed gambling following the tax increase, we estimate the subset of these individuals who can be assumed to develop gambling problems. This focuses on the subset of gamblers without gambling problems anticipated to transition to the unlicensed market.[38] Our estimate derives from research by the Public Health Agency of Sweden, showing that approximately 30 percent[39] of individuals gambling on the unlicensed market report gambling issues, compared to 2 percent[40] on the licensed market.[41]

We recognise the potential for an adverse selection problem among individuals with gambling problems in the unlicensed market. Adverse selection would suggest that individuals that are more likely to develop gambling problems are already disproportionately active on unlicensed sites. Hence, the prevalence rate of problem gambling among consumers active on unlicensed sites may not reflect the anticipated behaviour of those switching to unlicensed sites. To account for this potential issue, we reduce the 30 percent prevalence rate for unlicensed gambling downward by 25 percent.

Based on the assumed prevalence rates, our approach estimates the increase in problem gambling attributed to the anticipated increase in the prevalence rate among individuals transitioning to the unlicensed gambling market. We estimate that between 591 and 1 247 individuals will develop gambling issues following the tax increase, see Table 7.

Our estimate of the tax revenue adjustment is SEK 19 to 41 million

Last, we estimate that the impact on tax revenues due to more problem gambling is between **SEK 19 to 41 million**, see Table 8. This translates into an estimated cost increase of 0.17 percent to 0.36 percent in the total yearly cost for problem gambling in Sweden.

Table 7: Lower channelisation impact on number of problem gamblers

PARAMETER	VALUE
A. # of individuals who will switch to unlicensed gambling	2 881 – 6 085
B. Probability of problem gambling on the licensed market	2%
C. Probability of problem gambling on the unlicensed market	22.5%*
# of individuals who will start problem gambling	**591 – 1 247**

Note: The number of individuals who will start problem gambling is calculated as **A** multiplied with (**C** minus **B**). * We reduce the reported prevalence rate of 30% for unlicensed gambling by 25% to account for potential adverse selection bias.

Source: Copenhagen Economics based on (i) the estimated number of individuals who will switch to unlicensed gambling, and (ii) prevalence rates for licensed and unlicensed gambling sourced from Public Health Agency (2022) *Resultat från ett regeringsuppdrag att genomföra en befolkningsstudie om spelande* and Public Health Agency's '*Statistik över spelproblem i Sverige*'.

Table 8: Net decrease in tax revenue from costs associated with problem gambling

PARAMETER	VALUE
A. Increase in number of problem gamblers	591 – 1 247
B. Yearly cost for problem gambling per individual	32 733 SEK
Net decrease in tax revenue	**19 – 41 mSEK**

Note: The net decrease in tax revenue is calculated as the product of **A** and **B**.

Source: Copenhagen Economics based on (i) the estimated increase in number of problem gamblers, and (ii) the yearly cost for problem gambling as reported by Gustafsson, A., Hjalte, F., & Hofmarcher, T (2023) *Samhällets kostnader för spelproblem i Sverige 2021 – En uppdatering*.

[38] As such, our assessment does not account for the proportion of individuals with existing gambling problems.

[39] The Public Health Agency of Sweden (2021) *Results from a government commission to conduct a population study on gambling* [Link].

[40] The Public Health Agency of Sweden (2021*) Statistics on gambling problems in Sweden* [Link].

[41] We acknowledge that 2 percent represents the entirety of gamblers in Sweden, including those who participate in the unlicensed market. Consequently, we anticipate that the prevalence rate solely within the licensed market will likely be lower. Nevertheless, we utilize this prevalence rate to deduct individuals who are anticipated to switch to unlicensed gambling with existing gambling problems from our calculation. As such, our approach is conservative.

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ABOUT COPENHAGEN ECONOMICS

Copenhagen Economics is one of the leading economics firms in Europe. Founded in 2000, the company currently employs over 100 staff operating from our offices in Brussels, Copenhagen, Helsinki, and Stockholm.

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