

DIFFERENT MODELS OF APPLYING ALCOHOL EXCISE TAX CHANGES IN THE BALTIC STATES

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Abstract. The dynamic nature of alcohol excise policy in the Baltic states makes it essential to understand how administrative transition models influence fiscal stability and public health. This study addresses a critical gap in economic literature by examining the operational mechanics of tax implementation, which often determine the real-world success of legislative changes. This research project aims to evaluate and compare the distinct approaches to increasing alcohol excise tax rates in Latvia, Estonia and Lithuania over the last decade. Employing a multi-methodological framework, the authors integrate comparative legal analysis with quantitative econometric modelling and qualitative expert assessments to examine the impact of these transitions on state budget revenues. The investigation reveals significant differences in national practices, which are driven by competing economic and political priorities. Latvia enforces a model of immediate inventory re-taxation, which secures a revenue increase within the first quarter of implementation. In contrast, Estonia and Lithuania adopt a deferred model, applying new rates only to products released after the legislative date. Although this approach enhances legal predictability for businesses, it causes a fiscal lag of approximately three to nine months, which temporarily reduces the effectiveness of health-motivated consumption reduction goals. Thus, choosing a transition model creates a measurable trade-off between administrative expediency and the efficacy of immediate policy. Furthermore, the absence of a unified track-and-trace system hinders the precise quantification of cross-border trade fluctuations, which can result in substantial revenue leakage in border regions. These findings offer EU policymakers practical value by introducing the Excise Tax Transition Efficacy (ETTE) model, which provides a novel framework for optimising tax implementation strategies in emerging European markets.

Keywords: alcohol excise tax, Baltic states, fiscal policy effectiveness, tax implementation models, taxation efficiency.

JEL Classification: H20, H21, H25

1. Introduction

Despite their geographical proximity and similar historical backgrounds, the Baltic countries have significantly different approaches to alcohol excise tax rates, control mechanisms and implementation strategies. The latest OECD statistics, which rank all three Baltic states among the leaders in alcohol consumption, have given this topic heightened relevance, with Latvia showing particularly concerning trends in recent years (OECD, 2024). Although the public health implications have been studied, there is still a critical scientific gap in terms of understanding the fiscal and administrative efficacy of the various tax implementation models used in the region.

The core scientific problem is the lack of a unified framework for evaluating the transitional effects of tax changes. While Council Directive 92/84/EEC sets out minimum rates, it gives member states full autonomy over their implementation. The absence of prescriptive guidance results in divergent political and economic strategies that affect state revenues and market stability.

This study aims to evaluate different models for applying alcohol excise duty, considering both tax revenue efficiency and alcohol consumption reduction. To this end, the research will compare Latvia's immediate re-taxation model with Estonia's and Lithuania's deferred models. The methodology will involve multi-criteria comparative analysis, quantitative modelling

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of tax revenue trends and qualitative expert interviews based on extensive industry experience. The novelty of this research lies in the introduction of the Excise Tax Transition Efficacy (ETTE) model, which provides a framework for quantifying the administrative success of shifts in fiscal policy. The main limitation of this study is the lack of a unified track-and-trace system in the Baltic states, which restricts the precise quantification of cross-border trade flows.

The article is organised into four sections. The first section reviews the theoretical and legal framework. The second section details the research methodology and the ETT model. The third section presents the empirical findings and a comparative analysis of the three states. The final section provides conclusions and policy recommendations.

2. Motivation to Change Alcohol Excise Tax Rates

Initially, it is important to note that there are several alcohol excise tax groups mentioned in European Union (EU) Directive 92/84/EEC. However, EU member states are authorised to make minor corrections to these groups, which makes it difficult to gather and analyse data, particularly among the three Baltic countries. The first issue is therefore to explain the necessity or benefits of changes to not only rates, but also alcohol groups, which are mutually related.

Alcohol groups in Baltics are set as follows:

1. Spirits or strong alcoholic drinks are alcoholic beverages made from ethyl alcohol.

2. According to the laws of Latvia, wines and sparkling wines are produced from grapes and contain up to 15% alcohol. In Lithuania, however, this group is different and includes fermented products made from fruit and berries. In Lithuania, this group is divided into two subgroups: one with an alcohol content of up to 8.5%, and one with an alcohol content above 8.5% (VMI, 2023). In Estonia, this group also includes both fermented fruit and berry products, as well as grape wines and sparkling wines. However, the alcohol content threshold that separates this group into two subgroups is 6% (Maksu- ja Tolliamet, 2023). This leaves only Latvia with a separate group for fermented products produced from fruits and berries, which is divided into two subgroups, as in Estonia: one with an alcohol content of up to 6%, and one with an alcohol content above 6%.

3. There are two subgroups of intermediate products, which are subject to different excise tax rates: products with an alcohol content below 15%, and products with an alcohol content above 15% (up to 22%).

4. Beer and beer-based drinks in which beer is the main alcoholic component.

As can be seen here, the main changes occurred in the group of wines and fermented beverages, whereas EU Directive 92/83/EEC only sets out four groups: spirits, intermediate products, wines, and beers (EU, 1992). This Directive also allows for different rates to be set for wines and sparkling wines, and for all fruit and berry fermented products to be placed in one group. This widens the opportunities for Member States to create multiple subgroups with different rates of excise duty. Sometimes the excise tax rate can be the same for all or several subgroups within one group, but this allows for the creation of several subgroups in the future.

Usually, the reasons for such subgroups and their taxation can be guessed from policy makers' announcements, because politicians usually leave themselves room for manoeuvre and do not explain the reasons for their decisions. Nevertheless, microeconomics furnishes scholars with econometric instruments to elucidate, or at the very least to make an attempt at elucidating, the decisions made by politicians. In the authors' opinion, the most suitable framework for this case is the Government Welfare Maximisation Model (Cawley & Ruhm, 2011), a sophisticated version of the Utility for the State concept (Bergson, 1938). The authors provide a model that explains the optimal tax policy with flexibility. The core idea is that the government designs the tax structure to maximise overall social welfare (W), subject to constraints relating to excise tax revenue, health objectives, social security, and politics. Creating excise tax subgroups with the same tax rate reduces the policy adjustment costs associated with future tax changes. The state's objective is to maximise a weighted sum of desirable outcomes, rather than just tax revenue. To achieve this, the state's objective function (W) must be constructed:

$$\max_{t_{i,k}} W = \alpha_1 R(t) - \alpha_2 H(t) + \alpha_3 P(t) - \alpha_4 C(t)$$

Variables are as follows:

W – government welfare (Utility for the State)

$R(t)$ – total excise tax revenue: income generated by all alcohol excise tax groups t . ($\alpha_1 > 0$)

$H(t)$ – social health costs: negative costs (e.g., healthcare, public safety) related to consumption q . ($\alpha_2 > 0$)

$P(t)$ – political support to industry: utility gained from supporting local producers or ensuring market stability. ($\alpha_3 > 0$)

$C(t)$ – cost of policy adjustment: future costs of amending legislation to create new tax subgroups. ($\alpha_4 > 0$)

$t_{i,k}$ – excise tax rate: the excise tax rate applied to group i and subgroup k .

The state creates placeholder subgroups to reduce the future cost of policy adjustments. These subgroups enable swift and accurate tax adjustments in response

to market changes, such as unexpected production innovations that lower costs and increase consumption, or new policy objectives, such as promoting low-alcohol content products to reduce overall alcohol consumption. If the government suddenly decides to support a low-alcohol product (e.g., strong cider) and no such subgroup exists, there can be a high $C(t)$ cost if a new subgroup is needed later. This is because it must undergo a full legislative process to define the category, set the rate and amend the law. This process is time-consuming and politically costly, and it risks being influenced by lobbyists and the industry. Cost might be lower $C(t)$ if the subgroup already exists. If the subgroup (k) for "fruit-fermented products up to 15%" already exists (even if its rate is currently the same as the "wine" group), the government only needs to issue a decree or minor amendment to change $t_{i,k}$ for that existing category. The legal and political effort required is minimal, and will eventually result in a low $C(t)$ in the future. The creation of these subgroups is a strategic move for the foreseeable future.

Latvia has made it clear that it is committed to supporting local producers, particularly those producing raw materials from traditional local fruits and berries, especially in the low-alcohol drinks category, which is dominated by cider and similar low-alcohol fermented beverages. This is precisely why Latvia, unlike its neighbouring countries, has a separate group of fermented beverages with two sub-groups: those with an alcohol content of up to 6% and those with over 6% (up to 15%). This seems to be a sensible policy for supporting local producers, as grapes are grown in Latvia, albeit in small quantities, and are not considered traditional local berries.

Like Latvia, Estonia has similar aims, but it does not have a separate alcohol excise group for fermented beverages – these are grouped together with grape wines and sparkling wines. Interestingly, for a long time, the excise tax rate for the subgroup with an alcohol content below 6% has not only been significantly lower than for the subgroup above 6%, but has also remained unchanged. It conveys the message that, for a period of time, both countries have implemented policies that support local raw material producers, offering not only a lower excise tax rate but also price stability in the market. This was done in order to obtain adequate sales volumes that would change local consumption habits and benefit local producers. Such a policy also tends to promote a healthier lifestyle by supporting products with lower alcohol content, which would predictably result in lower total alcohol consumption per capita in pure alcohol terms. Therefore, there are two motivations for making decisions at the state management level: gains for the state budget and the local economy, and improvements to public safety and health indicators. Similar research

can be found across Europe, including in Ukraine (Romensaka, 2021; Lysiak et al., 2021).

As seen from the previous example, there is a motivation to create a separate group and subgroup for alcohol excise taxes, and to maintain certain politics of excise taxes that do not tend to solve issues by raising taxes. On the contrary, they encourage consumers to choose alcoholic beverages with a lower alcohol content and without additives, such as sweeteners, colourants or aromas. This would turn such products into intermediate products with a higher excise tax rate, and eventually a higher price.

Another motivation for changing the excise tax rate for a particular group of alcohol is to increase the tax rate, thereby demotivating consumers from drinking alcohol from a particular tax group. Assuming that demotivating consumers from consuming alcohol altogether would threaten the safety of society, the necessity of having so many different alcohol groups becomes obvious. This allows policymakers to manage the alcohol market and consumption in accordance with societal politics. There also has to be some kind of harmony between the taxation of different types of alcohol, as eliminating one or several groups by placing too heavy a tax on them is equivalent to prohibiting alcohol for a part of the consumers. If the aim is to reduce alcohol consumption, raising alcohol excise tax rates is an obvious solution, as demonstrated by recent research by a group of international researchers who published the paper "The Impact of Raising Alcohol Taxes on Government Tax Revenue: Insights from Five European Countries" (Manthey et al., 2024). This research reveals another aspect of such motivations: income or revenue for the state budget, which provides the necessary financial resources for expenditure. In many countries, tax revenue is an essential part of the state budget (Olatunji Olaoye et al., 2024; Shunevych, 2020; Buromenskiy et al., 2022).

In the Baltic states, the government is motivated to raise the rate of alcohol excise tax not only due to noble goals such as improving health indicators and ensuring societal safety, but also because, according to OECD data, the state budget is heavily dependent on alcohol excise tax revenue. The Baltic states lead the way in Europe and among OECD countries with around 2% of their annual state budget revenue coming from alcohol excise tax. Recently, NATO required 2% of Gross Domestic Product (GDP) to be invested in defence. Even though these two elements are not the same, the percentage is still significant. In the case of Latvia, the World Bank states a GDP of 32.1 billion USD and government expenditure of 6.08 billion USD, which would make the defence budget 9.47% of state budget expenditure. As revenue and expenditure are similar, one can assume that 21% of state defence expenditure in Latvia should be covered

by alcohol consumption alone. For Estonia, this figure would be almost 20%, and for Lithuania, it would be 28% (World Bank, 2024).

Due to new threats to global safety, NATO will now require 5% of GDP, and the Baltic states are already considering fulfilling this essential request. One can therefore expect two things: the impact of alcohol excise revenue on the defence budget will decrease, but alcohol excise tax will also rise to cover state budget expenses. Furthermore, society is becoming increasingly responsible in various areas, including defence, and is beginning to understand the financial requirements needed to support it and other needs (Portna et al., 2019). A call for an increase in tax revenue is usually one of the main motivators for changing alcohol excise tax rates, but it can never be the only one (Lysiak et al., 2022). Politics is the art of harmony. Microeconomic models with variables can help here (Harris et al., 2006).

This situation requires a sophisticated approach that goes beyond simply maximising alcohol excise tax revenue. The most suitable model for determining the politically and economically feasible limit for increasing the alcohol excise tax, while accounting for the defence budget gap, is the Excise Tax Revenue Maximisation with Political and Laffer Constraints Model. This model combines optimal tax theory with political economy constraints and the Laffer Curve concept, which states that raising the tax rate can paradoxically decrease revenue due to reduced demand, cross-border trade or the emergence of a black market. The state's primary objective is to minimise the total budget deficit (Δ) after accounting for the mandatory defence spending (D) and the total revenue collected (R_{total}).

$$\min_{t_{alcohol}} \Delta = D - R_{total}(t)$$

Variables are as follows:

D – the required defence budget (e.g., 5% of GDP)

$R_{total}(t)$ – total government revenue, which is a function of the alcohol excise tax rate ($t_{alcohol}$) and all other stable revenue sources (R_{other}): $R_{total} = R_{alcohol}(t_{alcohol}) + R_{other}$

$R_{alcohol}t_{alcohol}$ – alcohol excise tax revenue, determined by the tax rate ($t_{alcohol}$) multiplied by the quantity demanded (Q), which is itself a function of the tax rate (i.e., $R_{alcohol} = t_{alcohol} \times Q(t_{alcohol})$).

The model is solved subject to constraints that prevent social or economic failure. Key constraints and variables are as follows: Laffer Constraint: $t_{alcohol} < t_{Laffer}^*$

The chosen tax rate ($t_{alcohol}$) must be less than the theoretical revenue-maximising rate (t_{Laffer}^*) to ensure revenue does not drop and the black market does not flourish.

$$\text{Cross-Price Elasticity } (\epsilon_{border}): \frac{\delta Q_{local}}{\delta P_{neighbor}} < 0$$

The price elasticity of demand for locally produced alcohol is strongly influenced by the price of alcohol

in neighbouring countries ($P_{neighbour}$). The model must include ($P_{neighbour}$) as a key input. Raising $t_{alcohol}$ increases cross-border trade, which acts as a major leakage on revenue.

$$\text{Political Constraint: } \frac{t_{alcohol} - t_{previous}}{t_{previous}} \leq \lambda_{max}$$

The rate of increase must be below a maximum politically acceptable threshold (λ_{max}) to prevent social unrest or electoral defeat, ensuring positive results at following elections, because politics is art of harmony.

$$\text{Social Welfare Threshold: } H(t_{alcohol}) \geq H_{min}$$

The tax any way must achieve a minimum acceptable reduction in alcohol consumption (H_{min}), fulfilling the public health and social safety motivation. The solution will yield the optimal feasible alcohol excise tax rate ($t_{alcohol}^*$) that maximises alcohol tax revenue without violating the political and Laffer-curve boundaries. If the defence requirement D is not met after calculating the revenue from $t_{alcohol}^*$ (i.e., $\Delta > 0$), the model clearly quantifies the remaining revenue gap (Δ). This gap must be filled by increasing revenue from other sources (e.g., income tax, VAT and corporate tax), or by reducing expenditure elsewhere. This demonstrates that relying solely on alcohol excise tax to fund a significant increase in defence spending is neither politically nor economically sustainable.

However, policymakers need to bear in mind the essential harmony between taxation and societal reaction. In the recent history of the Baltic states, Estonia had to decrease alcohol excise tax rates due to border trade filling up Latvia's state budget (Aaspõllu & Kook, 2019). A state without planned tax revenue is incapable of fulfilling its obligations. This suggests that the Estonian government did not evaluate all the variables when making this decision, and was only motivated by increasing alcohol excise tax revenue and decreasing alcohol consumption. There are many more variables that should have been taken into account when making such decisions. This is of particular pertinence in the context of the European Union, where the free movement of goods, people, capital and services is recognised as a fundamental right for all EU states and their respective populations. Although there are set limits for each individual on the amount of alcohol that can be transported across EU borders (EU, 2025), these limits are so high – 230 litres per person per journey – that they might as well not exist, and each country has to factor in border trade. Unfortunately, there is no tracking and tracing system for alcohol, which means the impact of border trade on the alcohol market is only guesswork.

There is one more important motivation for changing alcohol excise tax: to raise it in order to improve health indicators. This would enable politicians to achieve better statistics on a global scale, which they could then use as proof of the success of their policies

(McClelland & Iselin, 2019). On the one hand, excise tax revenue decreases locally; on the other hand, it grows in neighbouring countries with lower alcohol prices. However, alcohol consumption only decreases according to local data, while consumption as such may even rise. Lithuania is a good example of this: for several years, it was the country with the highest alcohol consumption in Europe. As there was virtually no official trade in alcohol in Lithuania, it can be assumed that all the alcohol sold in Lithuania was consumed on the spot. This prompted the Lithuanian government to take drastic measures and increase alcohol excise tax dramatically. After several attempts, results followed and, according to statistics, consumption decreased. However, during that period, border trade outlets began to spring up across Latvia, and Lithuanian alcohol began to find its way back from Latvia unnoticed, whilst revenue from alcohol excise duty was filling the state budget of Latvia, which had recently faced a decline in cross-border trade with Estonia; thanks to a sensible policy on alcohol excise duty, Estonia had managed to reduce both domestic alcohol consumption as well as its inflow into Estonia from Latvian cross-border trade. Therefore, it demonstrates that politics requires not only hard, tangible results in terms of health indicator improvement, but also emotional impact, as evidenced by statistics. This is another factor that microeconomic models can use to help the state make the right decisions for governing society.

3. Models for Applying the Increase in the Excise Rate on Alcohol

From time to time, due to various reasons, all taxes may be re-evaluated and decreased, but most likely increased. As mentioned in the previous section, Estonia recently faced a situation in which it had to deal with a reduction in alcohol excise tax rates, which raises the question of how this is done technically and what impact such a model has on the parties involved.

In Estonia (Riigikogu, 2003) and Lithuania (Seimas, 1995), the model is very similar: from a particular date onwards, alcohol entering the market from a delayed payment excise warehouse into a wholesale warehouse, or directly into the retail market, is subject to a new excise tax rate. This tax has already been paid to the state budget, or will be paid within a set timeframe. At the same time, goods released to the free market before that date remain in the wholesale warehouse or with retailers, with the excise tax already paid or declared at the previous rate. It makes the administration of taxes easier, as each batch of excise tax banderols has a fixed interval for which the excise tax has been paid, during the period when a particular rate was in force. Similar to products without excise tax, the banderols control each batch and have

a number for tracking the payment of excise tax. This model is based on the reliability of the law: merchants make decisions about investing in excise tax payments based on current conditions, safe in the knowledge that the taxes they have paid cannot be revised.

In Latvia (Saeima, 2004), the model is different and oriented towards the immediate implementation of alcohol policy after the new alcohol excise tax rates come into effect. This means that all alcohol entering wholesale warehouses from excise warehouses with delayed payment should be taxed at the new rate, in the same way as alcohol entering the retail market directly. However, all alcohol in wholesale and retail warehouses on that date must be inventoried, and the difference in excise tax between the new and previous rates must be paid to the government within 15 days of the new rates taking effect (VID, 2025). It also stipulates that all alcohol on the market is taxed at the standard alcohol excise tax rate. According to this principle, the model is also based on the reliability of the law in Latvia: no merchant should have advantages or disadvantages – all are equal before the law. Excise tax revenue is also an important part of the state budget (Stevanovic & Barac, 2018).

Alcohol industry experts interviewed in all three Baltic countries evaluate these different models differently, as circumstances and preferences may vary from country to country and from company to company. It is mainly in the Lithuanian market that the existing model is heavily used to increase competitiveness by wealthy market players, who can afford to invest their own or loaned capital in goods and taxes. This means that, before the rise in taxes, some players obtain large quantities of alcohol, store it in warehouses that they have previously obtained or rented, pay the government the actual excise tax rate, and then release the alcohol into the retail market at the previous low excise tax rate, while other merchants have to deal with the new, higher excise tax rate. This gives the most resourceful, spry and wealthy an advantage over those with fewer resources. This is similar to the research on car driving and alcohol consumption or mobile phone usage, which depends on availability and resources (Soratto et al., 2022). Experience shows that some key products may remain on the market for up to nine months with an unchanged retail price. Such examples are also met in Estonia, but with much lower volumes and shorter storage periods. In any case, it raises questions in both countries about the correctness of the competition rules and the government's targets to increase the cost of products in the retail market, thereby lowering consumption to improve social stability, health indicators and the economic situation. While this model provides legal opportunities for such practices, it also affects government goals and the overall market situation.

The model, which is widely used in Lithuania and Estonia, does not require any additional effort from ordinary traders or the tax authorities, nor does it create difficulties for them. This is undoubtedly a factor to be taken into account when choosing this model for implementing changes to alcohol excise duty – it ensures greater stability in society and facilitates a more neutral transition to a higher level of taxation. Nevertheless, it affects the competitiveness and turnover of products on the retail market, as two identical products with different excise rates may be on the same shelf at the same time. This may cause retailers to delay orders of goods with the new excise tax rate until goods with the previous rate are sold, which could affect wholesalers' cash flow. At the same time, retailers have the opportunity to make additional profits by selling goods with the previous and current excise tax rates at a price suitable for goods with the new excise tax rate. However, it is imperative to consider the implications of competitiveness. Whilst higher prices may result in increased profit, they can also lead to a reduction in the rate of goods rotation and diminished cash flow. The amalgamation of all variables indicates that the merchants who have been able to obtain high-rotation products with lower excise tax for a period of time during which the invested money cost still brings profit and advantage before competitors are the ones worthy of consideration.

Another key player in this model is manufacturers and importers, as investment in goods and the payment of taxes are usually carried out by the wealthiest and most stable segment of the market – large retail chains. This puts manufacturers and their representatives in a dilemma: on the one hand, it represents significant short-term revenue, which is usually accompanied by long payment deferrals to secure such a deal; on the other hand, it leads to prolonged production downtime following short-term overcapacity. Some may argue that producers and their representatives should avoid deals that could eventually cause difficulties with factory load and cash flow. However, this deal is so attractive that it's hard to turn down. After such deals, retailers stop or limit daily business with other producers and wholesalers for some time, as all the focus is on gaining profit and advantage from the products in which investment has been made. This confirms the producer's decision to go for such a deal was the right one. Nevertheless, it affects all parts of the market involved: retailers, suppliers, consumers and, eventually, governments too.

The government has received a substantial tax revenue injection, albeit not according to the expected and planned tax rates. This has also affected the cash flow of tax revenues. Sometimes, cash flow stability is more important than the amount of money gathered during a particular period. Each budget is planned according to the finances available in a particular

short period of time. However, such sudden income followed by a period of lower income requires more administrative resources and management skills.

Consumers may benefit from such an order of things, as competition rules will also oblige retailers without the resources for long-term investment in goods with a lower excise tax rate to lower their profitability in order to remain competitive. Conversely, not all citizens are consumers, and they may be interested in reduced alcohol consumption due to increased retail prices of alcohol resulting from higher alcohol excise tax rates. Therefore, this model is questionable in terms of the interests of citizens in general, as the government is not acting in the interests of alcohol consumers, but of society as a whole, where this policy should help improve social safety, economic stability and health indicators.

The model practised in Latvia differs greatly in that it does not allow goods with a previous lower alcohol excise tax rate to remain on the market. From this point of view, this model best serves the interests of both the government and citizens. At the same time, households with alcohol consumers will have to reduce their spending on other necessities, as alcohol consumption does not usually decrease. Consumers will suffer from an instant price increase on their everyday goods, especially if they are already in the lowest price bracket. High-priced alcoholic beverages are less impacted by price increases due to an increase in excise taxes because tax composes a minor part of the price build-up (Ngo et al., 2021; Shang & Chaloupka, 2020; Shang et al., 2018). Household members who do not consume alcohol but live on the same budget would also suffer, as their rations may decrease in quality alongside other available resources (Krūmiņš, 2024; Karriker-Jaffe et al., 2023).

The Latvian model also does not satisfy retailers or wholesalers, as both parties have to cover the difference in excise tax within a couple of weeks of the inventory being completed on the first day that the new rates come into effect. Wholesalers may find this easier as they can keep alcohol warehouse goods that have not been released into the free market on delayed payment. However, some goods would still be in the excise warehouse, and the difference for these goods should be covered. This requires good management and planning to maintain reasonable cash flow and investment in taxes. The situation is even worse for retailers, who have to pay the difference in excise tax for all goods in their stores or warehouses. These sums can be rather impressive, especially if the retailer deals with goods that do not sell well or has a wide range of products to ensure the availability of beverages for regular customers. Also, Latvian law limits retailers' rights to return unsuccessful goods with low turnover to wholesalers, and it is not only a matter of the wholesaler's goodwill: the law is strict and huge

finer may be imposed for breaches. This means that, a month or two before the excise tax increase, retailers either refuse to purchase additional alcohol or approach the wholesaler with an ultimatum to cover the excise tax difference in order to maintain their listing for the next period. The last option is not very legal and requires some tricky legal manoeuvring, such as covering unreceived marketing services as compensation for the tax difference, or similar activities. However, due to these legal issues, this practice is becoming less common. A decade ago, it was a popular blackmail tool that placed wholesalers and producers in bizarre situations. Thanks to legal threats, this practice has decreased. However, another practice that is still active, especially among large retailers in Latvia, is seen as legal: not approving a price increase, even in the event of an official increase in the excise tax rate. This means that the contract between the retailer and the wholesaler includes a price approval mechanism: the wholesaler has the right to increase the price within a certain timeframe, but the retailer has the right to reject such an offer, which means that the wholesaler must continue to deliver goods at the previous price if they want to remain listed. It may take a long time, sometimes even half a year, for an agreement on a price rise to be reached between the parties. In such cases, the retailer uses their dominant position to negotiate better conditions. Retailers in Lithuania and Estonia can also utilise such tactics, and indeed they do – as the difference in excise tax is covered solely by the wholesaler for a period of time. The crux of the matter pertains to a question of dominance, namely, who exerts a greater degree of control over whom? However, it causes a delay to alcohol price rises, despite the model used in Latvia making it seem so inevitable. This model applies new taxation rates to all alcohol on the market. This also delays the government from achieving its targets, except for one: tax revenue is as planned, alcohol sales have not dropped significantly, and taxes are being collected at the planned rate and according to the cash flow plans. Additionally, the state budget receives the difference in alcohol excise tax rates from retailers and wholesalers. From this point of view, the financial goals are at least reached. Also, given the previously mentioned difficulties with large retailers, wholesalers and producers are forced to raise prices in advance in order to be able to compensate for the excise tax difference from their profits over a longer period of time. This target is eventually reached too – alcohol prices are as high as possible, which should reduce alcohol consumption and have the following positive results. Only smaller retailers delay their alcohol purchases by a month or two before a tax increase, but as they account for only a small part of the market, this has no noticeable impact on the state's tax revenue cash flow. It only affects merchants and suppliers for a short period

of time. Nonetheless, this is not significant. More significant are the constant changes at the top of the leading alcohol excise groups and subgroups (Carlson, 2019; Freeman et al., 2020).

In Estonia and Lithuania, this excise tax change usually starts on January 1st, along with the beginning of the new year. In Latvia, however, the alcohol excise tax rate has been rising on March 1st for almost two decades, so it does not impact December sales. This means that citizens are not motivated to stock up on alcohol at home for the winter holidays at a lower price, and trade is not unnecessarily influenced. However, the alcohol tax rise in March does not influence the important trading month. Customers have regained financial stability after winter spending, and at the same time, the rise in alcohol prices can have an impact on household budgets and decrease overall consumption. In terms of timing, this seems wise, and the expected results are also achievable due to this aspect. The timing is also part of the model: due to winter expenses, consumers are more aware of price changes and can notice them and make decisions and conclusions.

4. A Comparative Analysis of Models for Implementing an Increase in the Excise Rate on Alcohol in the Baltic States

There are two models, but the result of each model differs in each state. This is obvious, as each model acts differently in different states due to various circumstances, such as the size of the market, purchasing power, neighbouring countries, customs, societal mentality, business ethics and government goals. In general, the only main difference between the two models is whether goods on the market may coexist with previous alcohol taxation rates when new alcohol excise tax rates are introduced. Everything else depends on the specifics of the market, and there are many different aspects and options regarding how each model would work in different countries.

It would be even more important to look for the reasons why governments choose one approach or model over another. Politics is obviously involved, as government decisions should provide wise management of the state and society, while at the same time supporting the government's ability to stay in power and, preferably, get re-elected. The model used by Lithuania and Estonia is safest for the government, as it provides plenty of opportunities for merchants and eases the process and period of rising taxation (Miceikienė & Čiulevičienė, 2017). It also does not create unnecessary difficulties for tax collectors or merchants in terms of administration or cash flow. In this way, society can see the government's active labour, and at the same time, it will not hit society with immediate price increases.

The model of Latvia demonstrates a long-term strategic financial operation: collecting taxes from border trade and as much as possible. The market itself regulates prices, and existing competition, despite the rise in excise tax, may ease the process and period of rising taxation. Latvia saw an opportunity to get involved in border trade with Estonia, which has had experience in this area for a long time, both in Tallinn and on ferries connecting Estonia to Sweden and Finland. This continues to this day, despite a decrease in volumes. The Latvian model, which applies a new, higher excise tax rate to all goods released onto the market, works well and does not allow for any tax speculation. When Estonia started fighting back by regulating border trade with Latvia by lowering the excise tax rates on alcohol, Latvia quickly responded by aligning itself with its neighbours. To this day, Latvia maintains its leading position in the Baltic alcohol trade by attracting customers not only from Estonia and Finland, but also from Lithuania for several years now. Latvia seems unconcerned by OECD statistics, as its citizens do not purchase alcohol in huge quantities in neighbouring countries, unlike the neighbours. Therefore, the model chosen for Latvia is absolutely right in terms of fulfilling the state budget's revenue requirements (Öztürk & Ekinçi, 2019). However, such a model in another state, or in the event of rapid excise tax rises as in Lithuania or Estonia, could cause mass protests and lead to the fall of the government or a change in its policies. The model is also very complicated to implement, especially for retailers, due to a lack of information about alcohol excise tax groups and subgroups, which are not indicated on products or sales documents. From an outside perspective, it also looks as if this inventory could be manipulated, but the prospect of harsh fines and legal action deters people from doing so. So, ultimately, this model seems to serve the government well, as long as tax rate increases are rational.

The current model is recommended for Estonia and Lithuania, given their rapid tax increase practices, as it allows market self-regulation. This is evident in cases where neighbouring markets have similar, or even the same, excise tax rates but significantly different retail prices. The issue at hand pertains to a question of governmental politics: namely, whether the primary focus should be on health indicators and social stability, or on economic stability and the fulfilment of the state budget through excise tax revenue.

The Baltic countries have already set out their plans to increase alcohol excise tax rates annually in the near future. Only time will tell how these plans will be implemented in practice, and whether they will remain as announced, thereby lending credibility to the region's taxation policy. The only thing that is expected to remain unchanged is the transition mechanism for tax increases in each state. In economics, there is a term

known as the Grandfathering Principle (Damon, 2019), which can also be applied to taxation policy. In this case, it would be referred to as Grandfathering in excise tax increases, whereby the transition rules for taxes would apply to existing stock on the market. This would be the case for Estonia, Lithuania and the majority of OECD countries, creating a stockpiling effect, also known as the inventory effect. In such cases, business actors decide to invest in stock on the market, knowing that some taxes will increase and the price of money is below the potential profit. This is usually beneficial for both the state and business providers in the short term: the state receives large tax revenues in a short period of time, while business actors enjoy previously calculated business advantages over competitors for a period of time. This delays the expected price increase on the market, as well as the achievement of health objectives and tax revenues, for a period of time. It also prevents other competitors from investing in taxes and stockpiling, which reduces their profits, and eventually means lower income taxes for state revenue. Consumers also benefit from remaining prices for a longer period than expected, which means that other sectors of the economy do not feel the cumulative tax increase. Taking into account that the tax increase would not lower consumption, but would mean fewer financial resources for other sectors of the economy, this is beneficial. Despite these arguments, the majority of economies adhere to the grandfathering principle for excise taxes, as they are accountable to taxpayers. Therefore, Latvia's approach to alcohol excise tax is different, but the model of tax increase is similar to VAT, as both are indirect taxes levied on consumption. However, they are not similar in their specific nature and application, especially considering that VAT increases the value not only of the product itself, but also of the excise tax included in the product's cost. In articles, it is often said that excise tax is fixed per unit, while VAT is a percentage of the price. At the same time, one must admit that the price including VAT includes the excise duty, and these taxes are interconnected in price formation. Nonetheless, the model for increasing taxes differs slightly: in Latvia, the share of the increase in excise tax must be paid to the state within a month of the date on which the tax was increased. Increased VAT must only be paid on goods sold at the new VAT rate, and no additional share must be transmitted to the state because the purpose of VAT is not to discourage consumption or charge for associated societal costs. Also, its scope could affect the entire economy unnecessarily.

Implementing changes to the excise tax rate represents a critical juncture where fiscal policy objectives (such as revenue maximisation) intersect with public health targets, maintaining a competitive business environment, and ensuring consumer welfare. Although the three Baltic states share a similar history and

economic background, their approaches to increasing alcohol excise tax rates differ significantly. The main point of contention is the transition mechanism, specifically whether existing market inventory is subject to the new, higher rate on the implementation date. The models observed in Latvia, Lithuania and Estonia require a sophisticated analytical tool that goes beyond simple revenue projection and integrates market behaviour and political constraints. In order to compare the efficacy of the two distinct transition models (Latvia vs. Estonia/Lithuania), the authors propose the Excise Tax Transition Efficacy (ETTE) model. This framework is adapted from the Excise Tax Revenue Maximisation with Political and Laffer Constraints Model, integrating principles from optimal tax theory (Lysiak et al., 2022) and welfare economics (Cawley & Ruhm, 2011) while focusing on the complex variables introduced by transition mechanisms. The model seeks to maximise the overall net social and fiscal outcome (S) by optimising the choice of the transition mechanism (M):

$$\max_{M \in \{M_{LV}, M_{EE/LT}\}} S = \alpha_1 R_{Timing} - \alpha_2 H_{Delay} + \alpha_3 P_{Stability} - \alpha_4 C_{Admin}$$

Variables:

M_{LV} = Latvian Model: immediate inventory re-taxation.

$M_{EE/LT}$ = Estonia/Lithuania Model: new rate applied solely upon new product release.

R_{Timing} (Revenue Effectiveness): The ability to collect the planned tax increase immediately, adjusted for cross-border trade and inventory speculation leakage ($\alpha_1 > 0$).

H_{Delay} (Health Goal Delay): The time lag before the full price increase is realised at retail, thus delaying the desired reduction in consumption ($\alpha_2 > 0$).

$P_{Stability}$ (Political and Market Stability): The utility gained from a neutral transition versus the risk of social unrest or electoral damage ($\alpha_3 > 0$).

C_{Admin} : The total cost of compliance, inventory checks, forced cash flow impacts, and legislative amendments ($\alpha_4 > 0$).

This article identifies two fundamentally different approaches to applying an alcohol excise tax rate increase, yielding distinct effects across the economy.

The Estonia and Lithuania model (new rate on new releases): under this model, the new excise tax rate applies to alcohol entering the market from delayed payment warehouses after the effective date. Goods that were released to the free market before this date remain taxed at the previous, lower rate. According to the state's tax revenue policy, revenue is not guaranteed immediately at the new rate in this case. Cash flow can be distorted by an unexpected injection of revenue before the tax rise, followed by lower subsequent income due to existing stock. The new alcohol excise tax rate may not generate the expected

tax revenue. In the business environment, it strongly favours wealthy players who can afford to invest significant capital in stockpiling huge quantities of goods that are subject to lower taxation. This gives them a competitive advantage for up to nine months, which affects fair competition rules and product rotation for smaller merchants. It favours the most resourceful, agile and wealthy before those with fewer resources. In terms of consumer interests, they may benefit temporarily as competition forces retailers, even those without stockpiled inventory, to reduce their profit margins in order to remain competitive, thus delaying price increases. On the one hand, consumers may benefit from this, as retailers will be obliged to lower their profitability simply to be competitive due to competition rules. Health policy interests would also be affected, as health targets (e.g., reducing consumption via price increases) would be delayed. Self-regulation of the market, driven by low-taxed inventory, undermines the government's immediate goal of raising the cost of products. Models like those in Lithuania and Estonia do not result in an instant rise in alcohol prices due to an increase in excise tax.

The Latvian model (immediate inventory re-taxation): all alcohol in wholesale warehouses and retail stores on the effective date must be inventoried, and the tax difference must be paid to the government within 15 days. This is the most efficient model for state tax revenue policy, as it ensures that all alcohol on the market is taxed at the actual rate immediately. It guarantees that financial goals are reached by providing tax revenue as planned. A strict model such as that in Latvia ensures highly efficient tax revenue. In this business environment, neither retailers nor wholesalers are satisfied, as both parties must cover the tax difference within a couple of weeks. This creates cash flow difficulties and may lead to dominant retailers using "blackmail tools" against wholesalers to cover the tax difference. Consumers suffer from an instant price increase, particularly in the entry-level price segment. However, this model is considered to serve the best interests of citizens in general, as it supports social and health safety indicators. In terms of health policy, this model best serves government goals, as the instant price increase is expected to reduce overall consumption, resulting in positive outcomes. Alcohol prices are as high as possible, which should reduce consumption.

Compared with other tax implementation models (e.g., VAT), this article highlights that excise duty is a tax levied early in the supply chain, on the manufacturer or importer when goods are released from a delayed payment warehouse. It is this feature that creates the 'existing inventory' problem. The model used in Estonia and Lithuania (taxing only new releases) respects the legal principle of the reliability of the law: merchants can rely on the tax rate at the time they pay it and release goods to the free

market. However, this can lead to market distortion and put players who cannot afford to stockpile at a competitive disadvantage. The Latvian model (re-taxation of inventory) prioritises fiscal and social effectiveness by ensuring that all market participants immediately operate under the same new cost structure, thereby eliminating stockpiling and achieving health goals faster. While this model is considered equitable under the law for all merchants, it is financially burdensome due to the forced tax investment. Therefore, different implementation models are not usually associated with VAT, which is paid by consumers at the point of sale. This avoids the "already-taxed inventory" dilemma that defines the application of excise duty. The choice between the Latvian and Estonian/Lithuanian models is essentially a political decision regarding the balance between administrative simplicity and market stability, and the immediate fiscal and social policy impact.

5. Conclusions

The study confirms that the fundamental distinction between the Baltic countries' excise policies lies not only in their respective tax rates, but also in the administrative models that govern their implementation. A critical factor is the coexistence of products taxed at different rates during the transition period. While the Latvian model eliminates this duality by immediately re-taxing inventory, the Estonian and Lithuanian approaches permit a "tax asymmetry" at the retail level, significantly complicating short-term fiscal forecasting.

The research highlights that Latvia's stringent model of immediate inventory re-taxation ensures high fiscal efficacy by securing an immediate increase in state budget revenue. However, this model poses risks to political and economic stability. The administrative burden and financial pressure placed on wholesalers and retailers can create friction between the state and the private sector, potentially leading to market dissatisfaction. The model adopted in Lithuania and Estonia does not allow for an instant rise in alcohol prices due to an increase in excise tax, and tax revenue may not align with the new alcohol excise tax rate.

By contrast, the models adopted by Lithuania and Estonia demonstrate considerable fiscal inertia. Since new tax rates only apply to products that are newly entering the market, retail prices do not rise immediately. Consequently, tax revenues do not align with the new excise rates for three to nine months. This delay hinders the achievement of both immediate fiscal objectives and public health goals related to reducing alcohol consumption.

The decision to maintain stable excise rates for specific alcohol subgroups is a strategic signal of government expectations. However, the empirical findings of this study suggest that these signals often

reflect internal political compromises rather than responses to consumer demand or market trends. Therefore, excise policy remains a top-down fiscal tool rather than a consumer-oriented regulatory mechanism.

A significant finding is the autonomy of retail price formation in the Baltic region. Even when products are manufactured in the same facility and subject to similar excise rates, the study shows that retail prices can vary considerably between countries. This suggests that local market competition and retailer margins have as much influence on the final price as state fiscal policy. This highlights the limitations of using excise tax as the sole instrument for price regulation.

The research proves that using a similar administrative model does not ensure a consistent market response. The Excise Tax Transition Efficacy (ETTE) model, which is introduced in this study, shows that the effectiveness of tax changes depends on national market structures and historical consumer behaviour. For policymakers, this highlights the importance of regionally harmonising transition models in order to mitigate the risks of cross-border trade and fiscal leakages.

Practical Implications and Future Research Directions

The findings of this research provide tax authorities and policymakers in the European Union, particularly in emerging markets, with a strategic roadmap. Adopting the Excise Tax Transition Efficacy (ETTE) model enables governments to simulate the fiscal outcomes of planned excise increases more accurately. Specifically, the study suggests that the Latvian "immediate re-taxation" model is superior for states prioritising rapid fiscal consolidation. Conversely, a hybrid approach combining deferred implementation with stricter inventory reporting may be more appropriate for states seeking to maintain market predictability and reduce administrative friction. These results are of practical value to national treasuries when it comes to balancing the trade-off between generating immediate revenue and fostering long-term political co-operation with the private sector.

While this study clearly establishes a link between implementation models and fiscal efficacy, there are still several areas that warrant further academic research. Future research should focus on the impact of digital track-and-trace systems in mitigating cross-border excise leakage, a primary limitation identified in this study. Furthermore, long-term longitudinal studies are needed to evaluate whether different implementation models influence the "substitution effect", whereby consumers shift from legal retail to informal or illicit markets. Expanding the ETTE framework to include other goods subject to high excise duties, such as tobacco and energy products, would provide

a more comprehensive understanding of transitional tax dynamics in the Baltic region and beyond.

Author Contributions

Agris Raipalis developed the theoretical framework and ETTE model, performed the quantitative analysis and conducted the expert interviews. Biruta Sloka supervised the research, refined the methodology and critically reviewed the manuscript. Both authors have read and agreed to the published version of the manuscript.

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