Maximizing Revenue: an in-depth Analysis of Tobacco Excise, Ethyl Alcohol Excise, and Excise Revenue

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ABSTRACT

Excise revenue's contribution to state revenue is intimately linked to its inclusion in the central government's financial report. The Directorate General of Customs collects excise duties on ethyl alcohol, tobacco goods, and ethyl alcohol-containing beverages, which are then reported to the federal government in financial reports. While there is a lot of research on tobacco excise, there isn't much on excise duties on ethyl alcohol, which is the subject of this study. The research technique is descriptive-quantitative, with secondary data sourced from central government financial reports from 2006 to 2022 and processed with SPSS software. Three hypotheses are tested, with the first indicating that tobacco excise has a considerable impact on excise revenue. The second hypothesis asserts that excise levies on ethyl alcohol have little impact on excise revenue. However, the final hypothesis is accepted, suggesting that tobacco excise and excise levies on ethyl alcohol have a significant impact on excise revenue, as demonstrated by a high R square value.

Keywords: Alcohol Excise Tax, Central government's financial report, Excise Revenue, Tobacco Excise Tax

INTRODUCTION

Excise revenue is crucial for the Central government's financial report, audited by the Supreme Audit Agency and issued by the Directorate General of Treasury. It is categorized under tax revenue. The Directorate General of Taxes collects taxes, while the Directorate General of Customs and Excise collects excise. Both agencies operate under the Ministry of Finance. Excise refers to the contribution made to the state on specific goods mentioned in the Excise Law.

Excisable goods are goods that possess specific characteristics, such as the need for control over consumption, monitoring of circulation, potential negative effects on consumers and the community, and the requirement for the government to impose charges for the sake of fairness and equilibrium. Currently, common examples of excisable goods in society include ethanol, tobacco products, and alcoholic beverages.

The largest contributor to revenue from Customs and Excise Tax, managed by the Directorate General of Customs and Excise of the Republic of Indonesia, is the excise tax on tobacco products (CHT), accounting for approximately 97 percent of the total revenue (Azizatun Nafi, 2021). This aligns with the idea that revenue from tobacco excise serves as the foundation for the government in the customs and excise sectors (Antonius, 2020). So, the significant increase in state revenue from this sector can be attributed to the government's annual policy of raising excise taxes, which is ultimately passed on to end consumers, particularly smokers, through higher cigarette prices in the market (Prakoso, 2021).

Based on existing literature and research, there is a lack of discussion on excise taxes, specifically on ethyl alcohol and beverages containing ethyl alcohol. This study focuses on three areas: excise taxes on tobacco products, excise taxes on ethyl alcohol, and excise revenue. Due to data gaps, this study only considers excise taxes on tobacco products and ethyl alcohol. The main objective is to examine the influence of these two variables on excise revenue, both individually

and together. The purpose of this research is to measure the impact of excise taxes on tobacco products and ethyl alcohol on excise revenue from 2006 to 2022. The analysis focuses on government revenue from these goods and aims to determine if it has been optimal or if an increase is needed.

LITERATURE REVIEW

Excise is a mandatory state contribution on certain goods, regulated by the Director General of Customs and Excise. It aims to control and monitor the use of goods with specific properties, addressing potential negative effects on the community and environment. The government believes it promotes justice and balance. Excise applies to tobacco products, ethyl alcohol, and beverages containing ethyl alcohol.

Cigarettes and tobacco products

This category includes cigars, leaf cigarettes, cigarettes, sliced tobacco, and other tobacco products resulting from processing, regardless of the use of substitutes or auxiliary materials. Products include:

1. Cigars (CRT) are tobacco leaves cut into rolls.
2. Leaf cigarettes (Klobot or KLB) are rolled products made from nipa leaves, corn leaves, or similar leaves.
3. Cigarettes are widely used and come in six types:
   3.1 Machine-made clove cigarettes (I and II) include cloves in the manufacturing process.
   3.2 Machine-made white cigarettes (I and II) are sold without cloves, rhubarb, or frankincense mixed in.
   3.3 Hand-rolled clove cigarettes (I, II, and III) are manually produced with cloves added.
   3.4 Hand-made white cigarettes (I, II, and III) are manually produced without cloves, rhubarb, or frankincense.
   3.5 Hand-filtered kretek cigarettes (I and II),are manually produced with cloves added.
   3.6 Hand-filtered white cigarettes (I and II)are manually produced without cloves, rhubarb, or frankincense.
4. Sliced tobacco is made from thinly sliced tobacco leaves.
5. Other tobacco processing products (HPTL) cater to market demands, such as electronic cigarettes (vape).

Ethyl Alcohol (Ethanol)

Ethyl alcohol, or ethanol (C_2H_5OH), is a clear liquid obtained through chemical processes or distillation. The excise tax for ethyl alcohol is determined by multiplying the volume in liters by the excise rate per liter set by Customs and Excise. This rate applies to the release of excise from any location.

The Central Government Financial Statements

The Ministry of Finance of Indonesia prepares an annual financial report to promote transparency and accountability in government activities. This report was prepared by the Directorate General of Treasury and follows Government Accounting Standards for relevance and reliability.

Prior Studies

Table 1 summarizes relevant research articles by previous scholars, serving as primary references for this study and establishing the correlation between independent and dependent variables.

Table 1. Previous Research

No.	Title, Researcher Name, and Year of Literature	Research Variables	Research Results
1.	Policy strategies for increasing tobacco excise tax	SWOT analysis of tobacco excise tax	To reduce cigarette consumption in Indonesia, we must improve

No.	Title, Researcher Name, and Year of Literature	Research Variables	Research Results
	rates in order to reduce cigarette consumption in Indonesia (Dwivedi & Johnson, 2013)	(CHT) tariff increase policy	the effectiveness of the policy to increase tobacco excise tax rates (CHT).
2.	The role of the utilization of tobacco excise revenue sharing funds in achieving the objectives of excise taxation (Gan, 2016)	The excise policies of three countries, China, India, and Brazil, have similar problems.	The government has failed to distribute revenue-sharing funds from tobacco excise as required by the Law to combat tobacco consumption in Indonesia, showing a preference for the domestic tobacco industry.
3.	Analysis of the policy of increasing tobacco excise rates on excise revenue at KPPBC TMP B Makassar (Sabri et al., 2022)	Policy to increase excise tax on tobacco products Excise Revenue at KPPBC TMP B Makassar	Increasing excise tax rates on tobacco products has a significant impact on excise revenue growth. One benefit of this increase is that it discourages illegal cigarette companies from promoting their products due to the high taxes.
4.	The impact of tobacco excise tariff policies and the crackdown on illegal cigarettes on household cigarette consumption (Giovanis & Athanasopoulou, 2016)	Excise tax on tobacco products Crackdown on illegal cigarettes Socioeconomic factors include the Human Development Index (HDI, GRDP, and Gini ratio). Household cigarette consumption	The increase in cigarette tariffs supports the excise tax goals in the Excise Act. Crackdown on illicit cigarettes and stronger enforcement efforts will reduce household cigarette usage. Socioeconomic factors also affect household cigarette consumption.
5.	Supervision of ethyl alcohol and beverages containing ethyl alcohol excise collection policy at the East Jakarta Directorate General of Customs and Excise office. (Chaudhuri & Holbrook, 2001)	Excise collection policy for ethyl alcohol and beverages containing ethyl alcohol	The alcohol excise tax collection policy is well supervised, but indirect supervision can be improved to address ongoing fraud.
6.	Optimizing state revenue from excise tax on beverages containing ethyl alcohol: micro data analysis (Baniya, 2017)	Potential excise revenue Excise tax effect Excise elasticity	Increasing excise taxes on alcohol products has the potential to further optimize the state's revenue, but it is important to consider the sensitivity of these products to price changes.
7.	Mapping excise research in Indonesia (Nguyen et al., 2013)	Excise research in Indonesia	40,48% of the research findings were published in Sinta 4 journals, with a majority of these publications (61.90%) focusing on tobacco excise. Additionally, 47.62% of the research conducted aimed to examine the

No.	Title, Researcher Name, and Year of Literature	Research Variables	Research Results
			effects of implementing excise taxes.
8.	Analysis of ethyl alcohol excise exemption according to excise law (Putra & Warmika, 2014)	Ethyl alcohol excise	The limit on denatured alcohol and its formulations, used to exempt ethyl alcohol excise, is specified in the Customs and Excise Regulation..

Previous research has shown a gap in studying the impact of excise on tobacco products (CHT) and ethyl alcohol on excise revenue.

FRAMEWORK
The framework of a study shows the connection between the independent and dependent variables, as depicted in Figure 1.
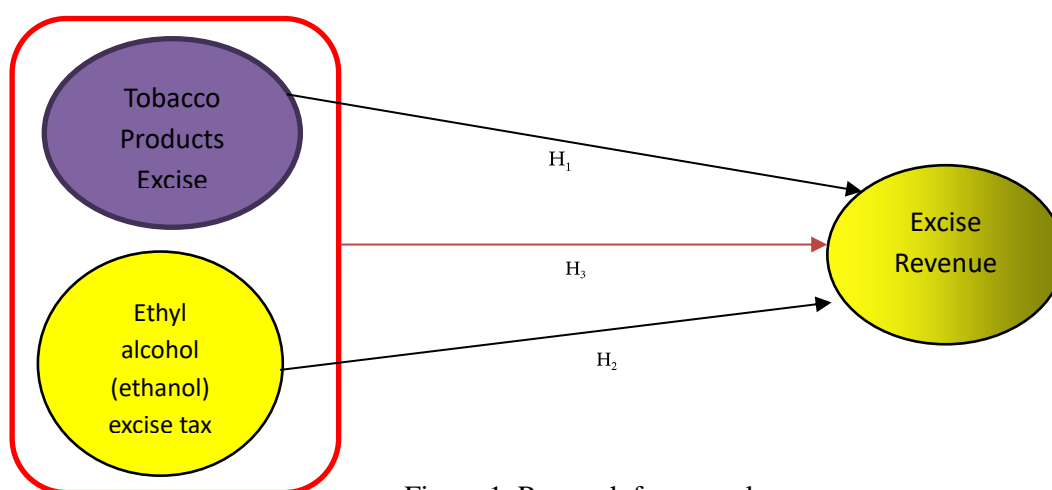

Figure 1. Research framework

Hypothesis
The study's hypothesis is as follows:

H_1 : The excise on tobacco products has a significant and positive impact on excise revenue.
H_2 : The excise on ethyl alcohol has a significant and positive impact on excise revenue.
H_3 : Both the excise on tobacco products and the excise on ethyl alcohol have a significant and positive impact on excise revenue.

METHOD
The current research approach is descriptive-quantitative, aiming to illustrate issues between independent and dependent variables. Secondary data from the central government's financial statements is used, sourced from the Ministry of Finance of the Republic of Indonesia's Directorate General of Treasury's website. The data spans from 2006 to 2022, excluding 2023. SPSS is used for data processing.

RESULTS
Descriptive statistical results:

Table 2. Descriptive Table

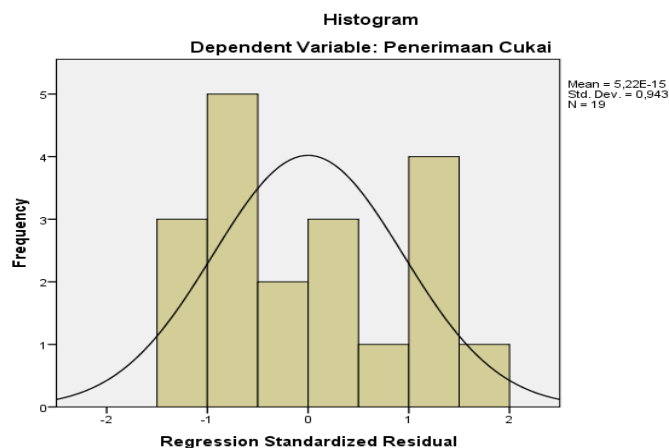| N		Min	Max	Mean	Std. Deviation
Tobacco Products Excise	19	3,E+13	2,E+14	1,06E+14	5,915E+13
Ethyl Alcohol Excise	19	83.713.179.000	4,E+11	1,87E+11	1,058E+11
Excise Revenue	19	3,E+13	2,E+14	1,10E+14	6,161E+13
Valid N (listwise)	19				

Source: data processed by SPSS
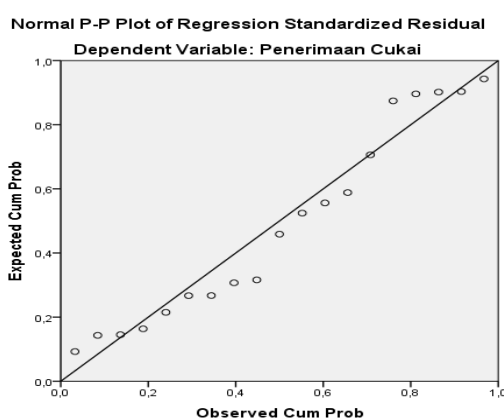
Figure 2. Histogram Graph

Figure 3. P.P Plot Graph
Source: data processed by SPSS

The table shows data for the independent variables (tobacco excise and ethyl alcohol excise) and the dependent variable (excise revenue), with 19 observations. The data was taken from central government financial statements from 2004 to 2022. Table 1 provides the maximum, minimum, average, and standard deviation for each variable.

Normality test results :

Table 3. Normality
Unstandardized Residual

N		19
Normal Parameters [a,b]	Mean	,0037007
	Std. Deviation	6,56364E+11
Most Extreme Differences	Absolute	,168
	Positive	,168
	Negative	-,151
Test Statistic		,168
Asymp. Sig. (2-tailed)		,166c

The dataset is considered normally distributed if the Kolmogorov-Smirnov test yields a value greater than 0,05. In table 3, the obtained value is 0.166, indicating that all variables used are normally distributed.

Multicollinearity test results

Table 4. Multicollinearity

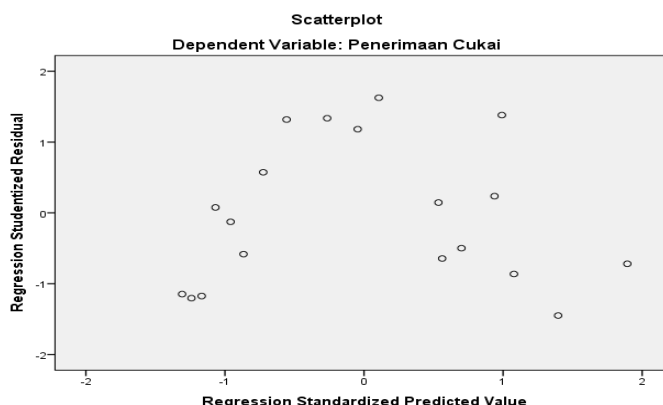| Coefficients [a]		Collinearity Statistics	
Model		Tolerance	VIF
1	Tobacco Products Excise	,896	1,116
	Ethyl Alcohol Excise	,896	1,116
a. Dependent Variable: Excise Revenue			

Figure 4. Scatterplot Graph

Source: data processed by SPSS

Table 4 relies on the initial rules of tolerance > 0,10 and VIF < 10 to avoid multicollinearity among independent variables. Based on the regulations, it has been confirmed that there is no multicollinearity among the independent variables used in this research.

Heteroscedasticity test result :

Table 5. Glacier Test

Coefficients

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1 (Constant)	1,004E+12	2,139E+11		4,694	,000
Tobacco Products Excise	-,001	,001	-,157	-,731	,475
Ethyl Alcohol Excise	-1,913	,664	-,617	-2,881	,011

Dependent Variable: ABS

The autocorrelation test :

Table 5. Durbin Watson

Model Summary [b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000a	1,000	1,000	,00633	1,641
a. Predictors: (Constant), LAG_LNX2, LAG_LNX1					
b. Dependent Variable: LAG_LNY					

Source: data processed by SPSS

The Durbin Wason result achieved is 1,641, while the Durbin Watson Upper (DU) value is 1,5355 and the Durbin Watson Lower (DL) value is 1,0743. By using the formula (4-DW)> DU < DW, we find that 2,359> 1,5355 < 1,641. Thus, we can conclude that there is no autocorrelation or correlation between periods in the variables studied.

Next, use multiple linear regression to look at the link between the independent variables (tobacco excise and ethyl alcohol excise) and the dependent variable (excise revenue). The study employs the following linear regression equation:

Y= 231.100.000.000.000+(1,040X1) - (2,022X2)

Description:
Y   = Excise Revenue
X1   = Excise tax on tobacco products
X2   = Ethyl alcohol excise tax

Multiple linear regression analysis:

Table 6. T-test

Coefficients

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1 (Constant)	2,311E+11	5,276E+11		,438	,667
Tobacco Products Excise	1,040	,003	,999	354,952	,000
Ethyl Alcohol Excise	-2,022	1,638	-,003	-1,234	,235

a. Dependent Variable: Excise Revenue

Table 7. F test

Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	6,831E+28	2	3,416E+28	70474,442	,000[b]
Residuals	7,755E+24	16	4,847E+23		
Total	6,832E+28	18			

a. Dependent Variable: Excise Revenue
b. Predictors: (Constant), Excise on Ethyl Alcohol, Excise on Tobacco Products

Table. 8. Coef. Determination

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1,000a	1,000	1,000	6,962E+11

Predictors: (Constant), Excise on Ethyl Alcohol, Excise on Tobacco Products
Dependent Variable: Excise Revenue
Source: data processed by SPSS

The coefficient of determination, which evaluates the variance in the dependent variable induced by the independent variable, is assessed on the final test. Table 8 is critical since it summarises the model, including the R-Square value, which serves as a benchmark in the determination test.

Table 8 has a R square of 1,000, which is equivalent to 100% when converted to a percentage. This demonstrates how tobacco and ethyl alcohol excise have a substantial impact on excise revenue.

DISCUSSION
The excise on tobacco products impact on excise revenue.

The earlier proposed theory will be examined in two stages: the T test and the F test. The T test evaluates the uniformity and significance of each independent variable's sample. To be valid,

the T test requires a significance value lower than 0,05 (sig < 0,05) and a calculated T value greater than the T table value. If these criteria are met, the hypothesis is accepted; otherwise, it is rejected.

Table 6 shows that the tobacco excise variable has a significant value of 0,000, meeting the first prerequisite of being below 0,005. The T count value in Table 6 is 354.952, which is greater than the T table value of 2,119. This means that the first hypothesis (H_1) is accepted, indicating a significant influence between excise tax on tobacco products and excise tax revenue.

The results of this research are in line with research not only by (Sabri et al., 2022), which found that increasing excise tax rates on tobacco products has a significant impact on excise revenue growth, but also by (Kusuma Wardani, 2022), who also said the increase in cigarette tax supports the excise tax goals in the excise act.

The impact of excise on ethyl alcohol on excise revenue.

The ethyl alcohol excise variable has a higher significance value than the reasonable limit of 0,235. However, since the T count is -1,234 and the T table value is 2,119, it is obvious that the second hypothesis (H_2) must be rejected. As a result, we can conclude that the ethyl alcohol excise has no major influence on excise revenues. This is feasible because ethyl alcohol and its derivatives are a sensitive problem in Indonesia, where the majority of the population is Muslim, and so the circulation of products containing ethyl alcohol and its derivatives is extremely limited. This might be different if the study were conducted in other countries where the use of ethyl alcohol and its derivatives is not prohibited.

Even though we previously found that the ethyl alcohol excise had no significant impact on excise revenues, (Sitepu, 2021) analysis shows that excise revenue on alcohol has increased dramatically over the last 25 years. Indonesia's alcoholic beverage sector has grown despite government restrictions aimed at minimizing negative externalities.

Excise revenue is affected by excise on tobacco products and ethyl alcohol.

The F test is used to examine if the independent factors influence the dependent variable. For this test, an Anova table is employed. Significant values and F values (F table and F count) are required. Prerequisites are comparable to the T-test: sig <0,05 and F count > F table. If these conditions are fulfilled, the hypothesis is accepted. If not, the theory is dismissed.

According to Table 7, the significant value achieved is 0,000, which is less than the necessary level of 0,05. However, this is not conclusive evidence of an influence. The F count (70474,442) is greater than the F table (3,63), as determined by comparison. Hence, the third hypothesis (H_3) is adopted. Finally, tobacco excise (X_1) and ethyl alcohol excise (X_2) have a substantial impact on excise revenue (Y).

This statement is in line with the data from the Republic of Indonesia's state revenue and expenditure budget for 2021 and 2022, which states that tobacco excise in 2021 will be around IDR 173 trillion and will increase significantly in 2022, to around IDR 194 trillion.Meanwhile, excise revenue from ethyl alcohol, or ethanol, is expected to be around IDR 156 billion in 2021, rising to IDR 190 billion by 2022.

CONCLUSION

The purpose of this study is to assess the impact of tobacco and alcohol excise taxes on excise revenue. It draws on nineteen data points from the Ministry of Finance's Directorate General of Treasury's central government financial report from 2004 to 2022. This study will investigate three theories. The first hypothesis examines the effect of tobacco excise on excise revenue and finds a significant consequence. However, the second hypothesis, which investigates the impact of ethyl alcohol excise on excise income, is rejected because it fails to meet the essential conditions. As a result, the excise on ethyl alcohol has no major impact on excise revenue. Finally, tobacco and alcohol excise taxes have a substantial impact on revenues. This adds to the evidence for the final hypothesis, which looks at how these variables affect revenue.

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