European Research Studies Journal
Volume XXVI, Issue 2, 2023

pp. 794-821

Exploring the Paradox: How Cigarette Excise Tax Affects Firm Value with Firm Size and Profitability as Key Moderators

Submitted 08/04/23, 1st revision 20/05/23, 2nd revision 06/06/24, accepted 30/06/23

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Abstract:

Purpose: *This study aims to explore the impact of cigarette excise tax on the value of tobacco companies in Indonesia, focusing on how firm size moderates this relationship.*
Design/methodology/approach: *Employing descriptive statistical analysis and Moderating Regression Analysis (MRA) using process software, this research analyzes panel data from quarterly financial statements of four companies listed on the Indonesia Stock Exchange over the period 2016-2023.*
Findings: *The study finds that cigarette excise tax has a significant negative effect on firm value, indicating that higher tax policies can adversely affect the financial performance of firms reliant on excise-taxed products. Additionally, firm size plays a moderating role, with larger firms demonstrating a greater capacity to absorb the negative impacts of excise taxes, while smaller firms are more vulnerable. Profitability (ROA), however, does not moderate the relationship between excise tax and firm value.*
Practical implications: *The findings highlight the importance of considering firm size when evaluating the financial implications of excise tax policies. Policymakers can use these insights to anticipate the challenges faced by smaller firms and identify strategies to mitigate the adverse effects of higher taxes. Business leaders in the tobacco sector can also leverage this information to better understand their firm's resilience to regulatory changes.*
Originality value: *This study contributes to the literature by showing that firm size is a critical factor in moderating the negative impact of excise taxes on firm value, offering a new perspective on the dynamics between regulatory policy and firm performance in the tobacco industry or as a paradox of tax impact and firm sustainability.*

Keywords: *Cigarette excise tax; Firm Value; Firm size; Profitability, Tobacco industry, Tax and firm sustainability paradox*

JEL codes:

Paper type: *Research article.*

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1. Introduction

Cigarettes and tobacco products significantly influence public health and government revenues, with taxation playing a pivotal role in shaping consumption patterns and economic outcomes. Traditional cigarettes and emerging alternatives, like e-cigarettes, have created a dynamic tax landscape, complicating the relationship between public health goals, fiscal needs, and industry behavior. This paper explores how taxes on these products affect consumption, government revenues, and public health outcomes, emphasizing the intricate interactions within the tobacco industry (Mainous *et al.*, 2015; Diaz *et al.*, 2023; Jun and Kim, 2021).

The primary purpose of excise taxes on tobacco products is to deter smoking and promote public health. Smoking remains a leading cause of preventable illnesses, including lung cancer, heart disease, and respiratory disorders. Higher taxes make smoking less affordable, discouraging consumption, particularly among youth and low-income groups who are more price-sensitive. Research highlights the effectiveness of tobacco taxes in reducing smoking rates. Studies indicate that increased excise taxes correlate with lower smoking prevalence, especially among young people and economically disadvantaged groups (Chaloupka and Tauras, 2020).

For instance, Pesko *et al*. (2020), Hu and Mao (2002) found that tax-induced price hikes significantly reduce smoking rates in these demographics. However, the effectiveness of tobacco taxes hinges on regular adjustments to keep pace with inflation and income growth. Without such adjustments, the real cost of cigarettes may decline over time, undermining the intended public health impact.

The advent of e-cigarettes has added complexity to tobacco taxation. Marketed as less harmful alternatives to traditional cigarettes, e-cigarettes often face lower tax rates, creating a disparity that can undermine efforts to reduce smoking through taxation. Lower taxes on e-cigarettes encourage substitution, where consumers shift from traditional cigarettes to these alternatives. While this may reduce traditional cigarette consumption, it can also erode government revenue from cigarette taxes.

For instance, regions with cigarette taxes below $1 per pack have observed increased e-cigarette use, drawing smokers away from traditional tobacco products *(Pesko et al.,* 2020 Hu and Mao, 2002). This substitution diminishes the fiscal benefits of cigarette taxes, posing challenges for governments reliant on tobacco tax revenues. Balancing tax rates for traditional and emerging products is thus critical to ensuring both fiscal stability and public health objectives (Campus *et al.,* 2021).

Tax policies must account for demographic variations in smoking behavior. Research indicates that men are generally more responsive to tobacco taxes than women, influencing their smoking habits and reactions to tax changes (Pesko *et al.*, 2020). In countries where male smoking rates are higher, this responsiveness can

significantly impact overall smoking prevalence. Policymakers should consider these differences to design targeted tax policies that maximize effectiveness across diverse populations. In countries with high tobacco consumption, such as China, tobacco taxes play a crucial role in generating government revenue. The Chinese National Tobacco Company (CNTC), a state monopoly, contributes substantially to the national budget through taxes on cigarette sales. This reliance highlights the dual role of tobacco taxes in promoting public health while supporting fiscal stability (Hu and Mao, 2002).

However, the growing popularity of e-cigarettes threatens this revenue stream. If e-cigarettes capture a larger market share, governments may face declining revenues from traditional cigarette taxes, necessitating policy adjustments. Striking a balance between promoting public health and maintaining fiscal health is essential for sustainable tobacco tax policies (Pasichnyi, 2022; Smith and Lee, 2023). Tobacco companies are directly affected by excise taxes, which influence their profitability and market strategies. Increased taxes often lead to reduced consumption, impacting company revenues.

In response, tobacco companies may implement pricing strategies, consolidate market share, or enhance marketing efforts to mitigate the effects of higher taxes. In the United States, for instance, state excise taxes on cigarettes range from $0.07 to $3.46 per pack. While these taxes aim to reduce smoking rates, tobacco companies have countered with aggressive pricing and marketing strategies, sometimes neutralizing the intended public health benefits (Chaloupka and Warner, 1999; Santoso and Erlando, 2020; DeCicca *et al.*, 2013). These actions underscore the need for robust enforcement of tax policies and complementary measures to curb smoking effectively.

Indonesia illustrates the complexities of tobacco taxation in a developing country context. The government has progressively increased cigarette taxes to reduce smoking rates, leading to a decline in cigarette production and factory closures in the tobacco sector. However, some producers have evaded higher taxes, keeping prices low and undermining the effectiveness of tax policies. Strengthening enforcement mechanisms and reducing tax tiers are critical steps to address this issue (Prasetyo and Adrison, 2020).

In 2023, Indonesia raised excise taxes by an average of 10% to discourage smoking among youth and low-income households. Tobacco spending in these households often accounts for a significant portion of income, underscoring the need for effective tax policies. Analysts predict that continued tax hikes, outpacing inflation and GDP growth, will strain tobacco companies' profit margins further (Bisnis.com, 2024).

Higher taxes can inadvertently fuel the illicit tobacco market, as consumers seek cheaper, illegal alternatives. In Indonesia, the excise stamp system helps differentiate

legal products from contraband, but enforcement remains challenging. Despite advances in tracking technology, illicit trade persists, undermining tax revenues and public health goals (Syaifudin, 2013).

Comprehensive measures, including stricter enforcement, enhanced tracking systems, and international collaboration, are necessary to combat this issue effectively. Excise tax increases also affect the financial performance of tobacco companies. In Indonesia, for instance, PT Bentoel International Investama Tbk (RMBA) faced declining profits following higher excise taxes. Similarly, PT Hanjaya Mandala Sampoerna Tbk experienced stock price declines due to rising tax burdens (Adur *et al.*, 2019; Wijaya and Sumirat, 2020). These examples highlight the broader economic consequences of tobacco taxes, influencing corporate valuations and market dynamics.

Excise taxes on tobacco products are a powerful tool for shaping public health and economic outcomes. While they effectively reduce smoking rates, their impact extends to government revenues and the financial health of tobacco companies. The rise of e-cigarettes adds complexity to the tax landscape, requiring nuanced policy approaches to balance public health and fiscal objectives. By addressing issues such as illicit trade and demographic variations, governments can design comprehensive tax policies that achieve both health and economic goals.

2. Theory and Hypothesis

2.1 Taxation, Tax Incidence Theory and Modigliani-Miller Theorem

The definition of tax according to Rochmat Soemitro in the book Mardiasmo (Mardiasmo, 2019): "Tax is the people's contribution to the state treasury based on the law (which can be enforced) without receiving reciprocal services (counter-performance) which can be directly demonstrated and which are used to pay general expenses". Taxpayers do not receive direct rewards, where the money collected from taxes is used for state needs for the greatest prosperity of the people (Mardiasmo, 2021). Tax payments are a manifestation of state obligations and the role of taxpayers to directly and jointly carry out tax obligations for state financing and national development.

The effect of excise tax on firm value can be understood through the lens of tax incidence theory and Modigliani-Miller theorem: (1) Tax Incidence Theory (Cox *et al.*, 2018), this theory examines how the burden of a tax, such as an excise tax, is distributed between consumers and producers. In the context of firm value, an excise tax can increase the cost of production, potentially leading to higher prices for consumers or reduced profit margins for firms. The extent to which a firm can pass on this cost to consumers can impact its profitability and, subsequently, its value; (2) Modigliani-Miller Theorem (Modigliani and Miller, 1963), this financial theory suggests that in a perfect market, a firm's value is unaffected by how it is financed

(whether through debt or equity). However, when taxes are introduced, the theorem is extended to include the tax shield provided by debt. Excise taxes, which reduce operating profits, can lower the overall value of the firm, as they decrease the cash flow available to service debt and provide returns to equity holders. Both theories help explain the direct and indirect impacts of excise taxes on firm value, considering market conditions and the firm's ability to pass on tax costs or benefit from tax shields.

2.1.1 Cigarette Excise Tax

Excise taxes are imposed on the production, sale, or use of a specific good or service or on a limited range of commodities or services. This is an illustration of an indirect tax, which is a tax levied on a transaction rather than on an individual or business entity. Excise taxes are specific consumption taxes, in contrast to more general taxes like sales taxes or spending taxes (Lutz, 1954). Excise policies in the Indonesian tobacco business do not undergo annual reductions.

Consequently, there has been a significant decline in the number of tobacco enterprises, but the frequency of smoking has persistently risen since 1995. Indicate that the rise in cigarette prices does not diminish individuals' inclination to take up smoking; furthermore, they reveal that a significant portion of the Indonesian population regards cigarettes as an essential commodity (Santoso and Erlando, 2020).

Hence, the rise in tobacco excise has a dual effect of augmenting state revenue and exacerbating the prevalence of illicit cigarette transactions. The drop in tobacco industry data primarily benefits large-scale enterprises. Consequently, the Indonesian population stands to gain if the government effectively allocates its funds to promote economic growth and development. The implementation of excise has positively impacted the health awareness of the UAE public in consuming excisable goods (Hussain *et al.,* 2023).

The Ugandan government implemented a policy requiring manufacturers of some excisable goods to affix Digital Tax Stamps to their goods. Companies and tax administrations may take time to accept and adopt new technologies, but such policy interventions will likely increase tax revenue mobilization efforts (Namuane, 2022).

Excise taxes are imposed on the production, sale, or use of a specific product or service, or on a limited range of products or services. This is an instance of what is commonly referred to as an indirect tax: a tax levied on a transaction, rather than directly on an individual or corporation. Excise taxes are specific consumption taxes, in contrast to more inclusive taxes like general sales taxes or spending taxes (Lutz, 1954). Excise taxes are imposed on the production, sale, or use of a specific product or service, or a limited range of products or services. This is an instance of what is commonly referred to as an indirect tax: a tax levied on a transaction, rather than directly on an individual or corporation.

Excise taxes are specific consumption taxes that target a restricted range of goods or services, in contrast to more comprehensive taxes like general sales or expenditure taxes (Lutz, 1954; DeCicca *et al.,* 2013). Taxes are imposed on goods or services that are deemed detrimental or unpleasant to deter consumption. Taxes that are levied based on this reasoning are referred to as sumptuary excises. Illustrative instances encompass levies on alcoholic beverages, tobacco products, and gambling. Excise taxes can be utilized to execute the received benefits method in taxation.

2.1.2 Innovation Theory

Innovation theory was put forward by Rogers (2003), where he developed the concept of how new ideas, products, or technology spread among populations, and he introduced categories of adopters (recipients) of innovation such as innovators, early adopters, early majority, late majority, and laggards. This theory is the basis for understanding the process of innovation adoption in various contexts, including business, technological, and social.

Furthermore, Chesbrough (2005) proposed the innovation theory as open innovation. In this concept, Chesbrough introduced the idea that companies must not only rely on internal research and development to create innovation but must also utilize external resources, such as ideas, technology, and knowledge from outside the company.

Chesbrough (2005) stated that by using an Open Innovation approach, companies can speed up the innovation process, reduce costs, and improve the quality of products or services. He also emphasized the importance of sharing ideas and collaborating with external parties, such as universities, research institutions, other companies, and the innovator community. Chesbrough points out that open innovation allows companies to be more flexible and adaptive to market and technological changes and expand their innovation horizons by exploiting various available resources.

This is also interesting for cigarette companies, which have had a very high level of business distortion, to implement this open innovation. Cigarette companies can carry out several innovations in the form of developing alternative tobacco products, designing more environmentally friendly packaging, initiating health campaigns, using local and organic tobacco products, collaborating with other industries to become unique co-brands, developing sustainable supply chains, innovation technology and usage, and customer service improvements.

2.1.3 Firm Size

Log Natural Total Assets (LNTA/LN) can be used as a company measure in various contexts, such as financial analysis and performance assessment (Barth, 2015). In general, LNTA refers to the total assets owned by a company, which includes all the resources the company owns and can use to carry out its operations. This study investigates how bank size, measured by total assets, affects their financial

performance (Ebimobowei and Felix, 2021).. The study (Sarah ALmuaither and Mahmoud Marzouk, 2019) assesses various factors that influence a company's capital structure, with total assets as one indicator of company size. The LN variable Company Size has a positive relationship with LN Total Assets, indicating a significant influence on total assets. Firm size, reflected in total assets, can be an indicator of a company's financial strength and attractiveness to investors.

Firm size, determined by total assets, can impact profitability in the consumer goods industry (Mantik and Suroso, 2022; Hasangapon *et al.*, 2021). Larger companies with higher total assets may have greater resources to invest in research and development, marketing, and expansion, which can lead to increased profitability. In the consumer goods industry, economies of scale may also come into play, allowing larger companies to produce goods at a lower cost per unit and potentially achieve higher profit margins. Therefore, understanding the relationship between company size and profitability can be crucial for investors and managers in this industry.

Companies with a larger size will be better able to take action to reduce agency costs and potential conflicts (Jensen and Meckling, 1976). Large corporations have several funding sources, which may result in their needing less working capital in proportion to their overall assets or sales (Nurhikmawaty *et al.*, 2020). The size of a corporation significantly influences the nature of its interactions both internally and outside. As a firm grows in size, its impact on its stakeholders increases. Using the sales logarithm model is one effort to proxy company size (Ebel and Ezeoha, 2008).

Large businesses, from an agency standpoint, can offer higher compensation and greater incentives to managers than small companies. Conversely, small businesses, typically family-owned, may be less inclined to offer stock options to their employees due to financial constraints and the difficulty of altering ownership structures.

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2.1.4 Profitability

Financial performance can be assessed by financial ratio analysis, which evaluates the company's profitability. Various financial performance assessment ratios can be derived from multiple sources. One such ratio is Return on Assets (ROA), calculated by dividing operational income or earnings before interest and taxes (EBIT) by total assets. A higher Return on Assets (ROA) indicates superior corporate performance due to a stronger return on investment. A higher Return on Assets indicates stronger

corporate success due to a larger return on investment. A higher Return on Assets signifies that the company is more effective in utilizing its capital to produce profits for its investors (Horne and Wachowicz, 2005).

ROA is a profitability ratio that indicates the company's ability to efficiently generate profits from the total asset owned. The greater the mean performance of the company's ROA, the better profitability of the company, because the rate of return increasingly generating profits versus the relatively small assets. ROA has a positive effect on company profitability as an increase in ROA leads to an increase in company profitability (Shahnia *et al.*, 2020; Herciu and Ogrean, 2017). High return on assets indicates how well the assets are managed by the companies to bring profit for each one dollar of asset that has been invested to the company.

Increasing ROA shows that the better the performance of the company and its shareholders may benefit from the increasing of capital gain and/or dividends received. ROA is used to evaluate whether management has received a reasonable return from the assets under its control (Atidhira and Yustina, 2017; Choiriyah *et al.*, 2021; Nurdin and Abdani, 2020). In addition, a high ROA can also indicate that the company is efficient in utilizing its resources and is able to generate more income with less investment. This can be a positive sign for investors looking for companies with strong financial performance.

By analyzing the ROA, stakeholders can gain insight into how effectively the company is utilizing its assets to generate profits, which can help in making informed investment decisions. Ultimately, a high return on assets can be a key indicator of a company's overall financial health and success.

However, it is important to note that a high ROA alone does not guarantee financial success. For example, a company could have a high ROA due to aggressive accounting practices or unsustainable growth strategies, which may mask underlying financial weaknesses. Additionally, industries with high capital intensity may naturally have lower ROA figures compared to industries with lower capital requirements, making direct comparisons between companies in different sectors difficult.

2.1.5 Firm Value

Sumarsan (2020) defines firm value as the price potential purchasers are willing to pay for a company in the event of a sale. Key determinants of firm value include capital structure, liquidity, firm size, and profitability (Ellul *et al.*, 2010). Firm value is the tangible or potential worth that a corporation may generate in the future, determined by various valuation models or techniques, leading to varying outcomes.

The firm's value can be influenced by its capital structure, as finance managers are responsible for establishing funding policies and investment strategies that can raise stock prices and ultimately enhance the firm's worth. Price to Book Value (PBV)

does measure company value as it indicates the valuation of price per share compared to book value per share. A higher PBV represents a higher price per share, and vice versa, reflecting the valuation of investors on company performance (Andamari *et al.,* 2021). Investors often use PBV as a metric to determine whether a stock is overvalued or undervalued. A PBV of less than 1 typically indicates that a stock may be undervalued, while a PBV of more than 1 may suggest that the stock is overvalued. It is important for investors to consider other factors in addition to PBV when making investment decisions, as it is just one of many indicators of a company's value.

The finance manager should determine the best financial mix based on several evaluations of firm performance. The firm's worth can be influenced by liquidity, as it reflects the management's handling of working capital. Typically, individuals assess a company's performance using the profitability factor. The firm value indicator utilizes the price-to-book value ratio (Dina and Hermawan, 2012; Sudjiman and Sudjiman, 2019; Amalia Haniftian and Dillak, 2020).

By calculating PBV, an investor can see whether the price of shares in circulation aligns with the company's book. When investing in shares, an investor must have in-depth knowledge of the instrument. One way to determine whether a stock is worth buying is to use price-book value or PBV. The PBV value helps determine which shares are in the overvalued or undervalued category to determine whether the current share price is higher or lower than the value of the company's assets.

2.1.6 The Effect of Excise Tax on Firm Value

The findings of a study Opiso *et al.* (2022) demonstrates the adverse effects of fuel oil excise charges on the efficiency of manufacturing firms, resulting from a significant tax burden. In addition, there exists a substantial inverse correlation between tax expenses and the well-being of households. Hence, tax policy players must devise strategies that not only enhance tax collections but also foster the expansion of the business realm.

This condition also shows that customers have confidence in goods subject to excise duty. This is the case with the results of the study Wijaya and Sumirat (2020), where the largest component of sales expenses in cigarette companies is excise expenses, so a significant increase in excise will reduce the profitability of changes and affect the company's stock performance and company value. They also confirm the study by Daeyong (2018), which states that excise taxes reduce company sales revenue.

The impact of an increase in excise duty is to increase the selling price of cigarettes, thereby increasing the cost of cigarettes and company income, thus having a strong impact on company revenue and profits and, in turn, the company's value (Surjono, 2015). On the one hand, an increase in cigarette excise tax rates will increase government tax revenues. Still, on the other hand, it will increase the selling price of

cigarettes so that consumers will be increasingly limited and can reduce company income and profits and, subsequently, the company value (Nargis *et al.*, 2020).

However, sales tax increases the sales intensity of Global markets, diversification of global markets, and customers in domestic markets. In general, the impact of excise taxes increases the competitiveness of companies playing in the global market. In this case, the cigarette company is positively affected by this situation.

Hypothesis 1: Excise tax has a negative impact on firm value.

2.1.7 The Effect of Firm Size on Firm Value

Company size has a significant effect on company value (Hirdinis, 2019; Widiyanti *et al.*, 2019; Iswajuni, Manasikana, *et al.*, 2018), as well as the results of studies (Nuraina, 2012) and (Sujoko and Soebiantoro, 2007) which also state that company size has a positive and significant effect on company value. These results also show that the larger the company size, the more proportional it will be to its value.

The company's large size causes this situation, so the company will be increasingly able to control market conditions and various risks of uncertainty and investor confidence. In this situation, the company is seen as being able to provide a positive signal because it is assumed to have good prospects (Gusaptono, 2012). In this way, investors will use information about the company's size in making investment assessments, which can ultimately increase the company's value.

Company size can impact the price to book value ratio, with smaller companies typically having lower PBV ratios which can affect stock prices (Andamari *et al.*, 2021; Siloholo and Rochyadi, 2021). On the other hand, larger companies with more stable earnings and assets may command higher PBV ratios as investors are willing to pay more for a share of the company's book value.

Hypothesis 2: Firm size has a positive impact on firm value.

2.1.8 The Effect of Profitability on Firm Value

Strong profitability indicates sound financial performance and corporate outlook, leading to a positive response from investors and ultimately boosting the company's worth. Financial performance is a metric used to assess a company's capacity to produce profits. Strong profitability reflects favorable financial performance and firm outlook, leading to a positive response from investors. Ultimately, this will enhance the company's value.

Financial performance is an indicator of a company's capacity to produce profits. Widnyana *et al.* (2020), Ramezani *et al.* (2005) found that financial performance in ROA had a beneficial impact on firm value. Shun-Yu Chen (2011) analyzed the impact of financial performance on firm value by studying 302 electronics companies and 345 companies from other industries listed on the stock exchange in

Taiwan from 2005 to 2009. Further Chen and Chen's research findings indicate that there is a favorable correlation between financial success and firm value.

The study result of Hutauruk (2024), Sudiyatno *et al.* (2012), Ado *et al.* (2020) asserted that profitability, as a measure of a company's financial success, has a beneficial impact on the company's worth. Profitability is a key factor in determining a company's financial performance and can have a direct impact on its value, either positively or negatively. When a corporation aims to boost profitability, its operational activities expand, leading to increased expenditures associated with these operations.

Hypothesis 3: Financial performance has a positive impact on firm value.

2.1.9 Firm Size Moderating Effect on Excise Tax and Firm Value

The study by Gordon and Lee (2001) discusses taxes and company value. This research explores how taxes influence corporate decisions and value and provides insight into how different companies may respond to tax policy in various ways depending on their size and structure. The research Hanlon and Heitzman (2010), Graham (2003), Khaoula and Moez (2019), da Rin *et al.* (2010) in which these observations are made includes a variety of research on taxes and firm value, including studies that look at how firm size influences the relationship between taxes and firm value.

These studies provide insight into how firm size can influence the relationship between taxes and firm value, either as a moderator variable or in the context of tax avoidance and corporate financial decisions. So, company size is a moderating variable in the relationship between financial performance and company growth. Company size is important in moderating the impact of excise tax on firm value in the tobacco sector. Large companies tend to better manage the negative effects of such taxes through financial strength, product diversification, and more effective business strategies. This suggests that in the analysis of firm value, it is important to consider size as an influential variable.

Hypothesis 4: Firm Size to Moderating Relation of Excise Tax and Firm Value.

2.1.10 Profitability Moderating Effect on Excise Tax and Firm Value

A study conducted by Wijaya and Sumirat (2020) found that there are principles and roles of good company financial performance that can support expenditures for paying excise taxes. A company's good financial performance will enable it to pay all basic obligations, including excise taxes, thereby increasing public confidence in the quality of the company.

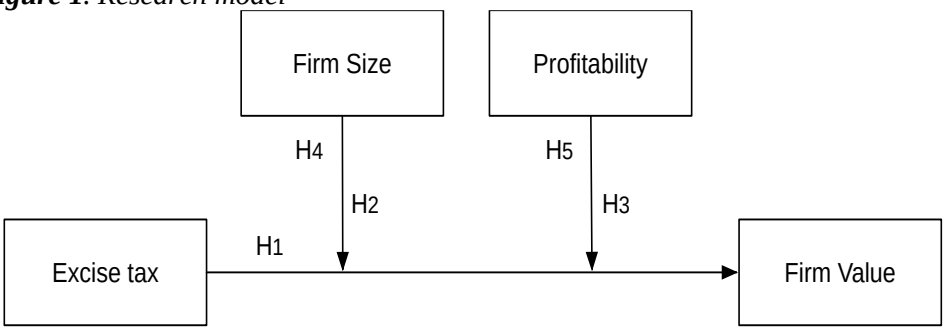
A study by Kartikaningdyah (2019) found that the greater the ROA value, the more capable the company will be of taking risks, which will have an impact on delaying tax payments and the company's value. The role of a company's financial

performance in excise tax is the best comparison and reduction in research investment, sales, gross margin, and company value (Lee, 2018).

On the other hand cigarette tax payments do not depend on the size of ROA. The amount of cigarette tax payments is based on the number of Taxable Goods, the tax rate, and the basic price of Taxable Goods. The role of excise is not only focused on state revenue, but also considers restrictions on production and consumption. Therefore, the basis for determining the amount of excise revenue depends on various factors (Al Rozi, 2017; Smith and Doe, 2020).

Hypothesis 5: Financial performance to Moderating Relation of Excise Tax and Firm Value.

***Figure 1**. Research model*



Alt Text:
"A chart depicting relationship model between independent variables (Excise tax) on dependent variables (Firm value) with multiple moderators company size (SIZE) and profitability (ROA)"

***Source:** Own study.*

3. Research Methodology

This research employs a case study approach, focusing on the exit of the cigarette company known by the initials RMBA from the Indonesia Stock Exchange in the last quarter of 2023. This occurrence presents an intriguing case study, particularly in light of the recent increases in cigarette excise tax rates, which significantly impact cigarette companies operating in Indonesia.

The objective of this study is to analyze how the government-imposed cigarette excise tax affects firm value, while also examining the moderating roles of firm size and profitability.

This study utilizes a quantitative approach that primarily focuses on testing hypotheses. The study focuses exclusively on measurable variables derived from hypotheses and theories, leading to all the disagreements.

3.1 Research Variables

The study considers firm value, specifically measured by PBV, as the response variable, whereas excise tax (EXST) is regarded as the independent variable. Concurrently, SIZE and ROA function as a multi-moderator variable.

3.1.1 Operational Definition of Variables

The objective of this study is to evaluate the research hypotheses by analyzing variables of the independent, dependent, and mediator, which are EXST, SIZE, ROA, and PBV. Furthermore, firm value is investigated utilizing excise tax, firm size, and profitability ratios. The price to book value (PBV) is a ratio utilized for comparing the share prices with the company's book value.

A price-to-book value ratio below 1 suggests that the company's shares are undervalued as they are trading below their book value. The determination of the high and low price-to-book value ratio involves comparing it with the price-to-book value ratio of other shares or the price-to-book value of the sector/market that is appropriate for comparison. Table 1 below shows all variables' definitions, measurements, and sources.

Table 1. *Definition of Variables*

Characteristics of variable	Name of variables	Symbol	Measurement
Firm Value	Price to Book Value	PBV	Corporate value is the value required by investors to guide their investment decisions, which is evident in the company's market price. Company or firm value reflects the effectiveness of management in handling business assets. the worth of a company is indicated by the market value of its stocks. This study utilized many corporate value proxies identified in the literature and empirical investigations, which were then tailored to meet the specific research requirements. Price book value (PBV) is the ratio of the price per share to the book value per share. The price-to-book value is a ratio measured on a scale. In general, shares with a PBV value above one or > 1 are considered expensive because they reflect a share price that exceeds the company's book value. On the other hand, shares with a PBV value of less than one or < 1 are considered cheap and are therefore sought after by many investors. The calculation is expressed mathematically as follows: Price to book value = Price per share / book value per share. See: Edward I. Altman (1968), Fama (1978), Stapleton et al., (1981), Myers and Majluf (1984), Chen et al., (1986), Ohlson James (1995), Grinblatt and Keloharju (2001), Damodaran (2002), Fama and

			French (2004), (Sutrisno, 2007).
Excise Tax	Excise Stamp	EXST	An excise stamp is a small label attached to products, often those liable to excise taxes like tobacco, alcohol, and other regulated items. It acts as evidence that the required excise taxes have been paid. The stamp's presence helps deter the sale of untaxed or illegally sourced goods, ensuring the government receives the correct tax revenue. Additionally, some excise stamps are designed with security features to guard against counterfeiting. Minister of Finance of the Republic of Indonesia (2023) Regulation of the Minister of Finance of the Republic of Indonesia Number 143 of 2023, concerning Procedures for Collecting, Withholding and Redistributing Cigarette Tax.
Firm Size	LN Total Assets	SIZE	SIZE is determined by taking the natural logarithm of the total assets (LNTA). Company size is the size of the company, which can be measured by total assets or the size of the company's assets using the logarithmic value of total assets. For example, see Rajan and Zingales (1998), Stapleton et al., (1981), Bamber et al., (2011), Walsh et al., (2008), Iswajuni, Soetedjo, et al., (2018), (Kajüter et al., 2022).
Profitability	Return on Assets	ROA	Return on assets (ROA) is calculated by dividing the net income before interest and taxes by the total assets, expressed as a percentage. Return On Assets is generally a type of profitability ratio, which is usually used to assess a company's ability to earn profits through assets. The computation is formulated mathematically as follows: Return on assets = EBIT / Total assets For example, see Merton (1973), Myers and Majluf (1984), Khan (2004), Choice review online (2013), Fama and French (2015), Brigham, Eugene F. and Houston (2015), DODD (2017), Buditomo et al., (2024).

Source: *Own study.*

3.1.2 Data Type and Source

This study employs quantitative data, namely ratio data. The study employed secondary data sourced from quarterly financial statements of tobacco companies listed on the IDX for the period spanning from 2016 to 2023. The financial data for the corporation was sourced from the IDX website, www.idx.com. Simultaneously, the corporate share price data was collected by utilizing historical data obtained from the Jakarta Composite Index (JKSE) on the official website www.finance.yahoo.com.

3.1.3 Data collection procedures

The data acquisition process of this study captures the essential information from the company's quarterly financial reports and stock prices. Following that, calculations were performed for each variable, which were subsequently followed by data analysis. This activity demonstrates a sequence of steps that involve the documentation of quantitative analysis, the collecting of data, the selection of data, and the tabulation of data. These operations yield the delivery of informative processed data.

3.1.4 Sample

The study's sample size consists of the cigarette companies that were listed on the Indonesia Stock Exchange between 2016 and 2023 in quarter data. The sample methodology utilized in this study was purposive sampling. To fulfill the conditions outlined in Table 2, the following criteria are introduced:

Table 2. *Sample Description*

No	Description	Total
1	Cigarette company are listed on the IDX 2016 - 2023	5
2	The firms have not released the financial quarterly in 2016-2022	(1)
3	Samples number (with complete data)	4
4	Period of the research (Quarterly): 2016-2023	31
5	Initial observation	124
6	Data outliers (abnormal data)	(7)
7	Final observation (N)	117

Source: *Own study.*

3.1.5 Technique of analysis

The study utilized a Moderated Regression Analysis (MRA) model to investigate and confirm the hypothesis. The data analysis was conducted using IBM Statistical Product and Service Solutions (IBM SPSS) along with 'Andrew Hayes' process split software. The following equation outlines the research model utilized in this study:

$$Y = i_Y + b_1EXST + b_2SIZE + b_3ROA + b_4EXSTSIZE + b_5EXSTROA + e_{Y.} \quad (1)$$

Explanation: Y = Price to book value (PBV); i_Y = intercept coefficient; b_1-b_5 = Coefficient for each independent and moderating variable; EXST = Excise stamp as determined by the excise tax in trillion; SIZE = Total Sales in trillion; ROA = Return on Assets; e_Y = error.

The MRA technique has several stages that involve descriptive statistics, tests for classical assumptions, tests for normality, tests for autocorrelation, tests for multicollinearity, and tests for heteroscedasticity. In this inquiry, the t-test was used to assess the hypothesis, with a significance level of 0.05 ($\alpha = 0.05$).

4. Discussion

4.1 Subject and Object Research Descriptive

This study seeks to examine the impact of excise costs, sales volume, and profitability on the company value of cigarette firms listed on the IDX from 2016 to 2023. Additionally, it attempts to investigate how company size and profitability moderate the link between excise costs and company value. This study specifically examines the cigarette firms that are publicly traded on the Indonesian Securities Exchange (BEI) throughout the quarterly period from 2016 to 2023. The company's shares are listed on the Joint Stock Exchange (JKSE). There are precisely 124 corporate sample observations that satisfy the stated requirements.

4.1.1 Descriptive statistical analysis

This study's descriptive statistical analysis aims to characterize the variables used precisely, namely EXST, SIZE, ROA, and PBV. Panel data prepared from 4 companies in the quarterly period 2016-2023 has been tested for data normality with 7 data outliers (124-7=117). The normality data test result of the asymptotic approach is that the Asymp value is obtained. Sig (2-tailed) 0.052 or > 0.05 or all 117 data are classified into the normal category and can be used in further analysis. The research findings illustrate each variable's minimum, maximum, and average values for the sample companies from 2016 to 2023, as presented in Table 3.

Table 3. *Result of Descriptive Analysis*

Variables	n	Minimum	Maximum	Mean	SD
Price to Book Value (PBV)	117	-0.99	16.13	2.7381	3.26059
Excise Tax (EXST)	117	0.10	97.59	20.8013	1.83189
LNTotal Assets (SIZE)	117	27.83	32.13	30.5357	1.49214
Return on Assets (ROA)	117	-21.26	40.02	6.7899	9.69395
Valid N (listwise)	117				

Source: *Own study.*

Their mean PBV is 2.7381, with a minimum PBV of -0.99 and a maximum PBV of 16.13. Additionally, it demonstrates a PBV value of more than 1 or > 1 that shows a PBV value of more than 1 indicates that the stock is overvalued or has good financial performance. Meanwhile, the average EXST cost is 1.8319 with a minimum of 0.10 and a maximum of 97.59 on a measurement scale. At the same time, SIZE as a proxy for firm size from sales volume has a median value of 32.13 with a minimum value of 27.83 and a maximum of 32.13 on a measurement scale with natural logarithm. The study also shows average ROA value is 6.7899 a minimum of -21.26 and a maximum of 40.02.

4.1.2 Correlation Matrix

The Pearson correlation matrix is a mathematical representation that quantifies the degree of linear association between pairs of variables used in Table 5. The

empirical findings validate a significant correlation between the independent variables and the dependent variables, wherein the excise tax expense (EXST) exhibits a positive relationship with company value (PBV) in this particular instance. Moreover, augmenting expenditures on EXST will bolster the value of the corporation and the firm. The relationship between multi-moderation, as determined by sales volume (SIZE) and return on assets (ROA), and the value of the firm, as assessed by PBV, shows a strong and positive association (Table 4).

Table 4. *The Pearson correlation coefficient and variance expansion coefficient (n = 117)*

Variables	EXTX	SIZE	ROA	PBV
EXST	1	0.978**	0.471**	0.326**
SIZE	0.978	1	0.599**	0.477**
ROA	0.471**	0.599**	1	0.750**
PBV	0,326**	0.477**	0.750**	1

Note: ***p <0.01(Correlation is significant with 2-tailed).*
Source: *Own study.*

4.1.3 Moderated Regression Analysis (MRA) Models

Regression analysis with moderation is employed to ascertain the impact of the independent variable on the dependent variable, taking into account the influence of the moderator variable. The impact of EXST on PBV is evaluated directly, while its influence is indirectly tempered by SIZE and ROA, using moderated regression analysis (MRA).

Table 5. *Result From A Moderated Regression Analysis By Process Models*

		Coeff	SE	t	p	Conclusion (sig = $p \leq 0.05$)
$R = 0.8595$, $R^2 = 0.7387$, MSE = 2.9035						
F = 62.7483, p = .0000						
Constant	i_Y	0.8346	0.2679	3.1156	0.0023	
EXST	b_1	-0.2005	0.0742	-2.7025	0.0080	Negatively significant
SIZE	b_2	0.1906	0.0496	3.8445	0.0002	Positively significant
ROA	b_3	0.0807	0.0002	2.4272	0.0168	Positively significant
Interaction_1 (EXSTSIZE)	b_4	-0.0008	0.0333	-3.2445	0.0016	Negatively significant
Interaction_2 (EXSTROA)	b_5	0.0018	0.0015	1.2356	0.2194	Positively but insignificant

Source: *Own study.*

Using the Regression Models Estimated from Table 5 above, the regression equation can be determined as follows:

$$\hat{Y} = 0.8346 - 0.2005EXST + 0.1906SIZE + 0.0807ROA - 0.0008EXSTSIZE + 0.0018EXSTROA \quad (2)$$

A coefficient signifies a direct correlation between the independent and the dependent variable, whereas a negative coefficient implies an inverse correlation. The following analysis offers a clarification of the previously indicated values of the regression coefficients. The coefficient for the EXST variable is -0.2005, meaning that an increase in EXST by one unit, with all other variables considered constant, will cause a decrease in PBV of -0.2005 and vice versa. A negative regression coefficient indicates that there is an inverse relationship between the two categories of variables.

The coefficient of the SIZE variable, 0.1906, indicates that a one-unit increase in SIZE while holding other variables constant, will result in a corresponding rise of 0.1906 in the company's value as measured by PBV. The coefficient of the Return on Assets (ROA) variable is 0.0807. This means that a one-unit increase in ROA while keeping other variables equal, will result in a gain in firm value of 0.0807 as assessed by PBV.

The correlation or interacton_1 coefficient between the variables SIZE and EXST, or the combined variable EXSTSIZE, is -0.0008. This demonstrates that a one-unit increase in EXSTSIZE will lead to a corresponding decrease in PBV of -0.0008, and conversely. Furthermore, the interaction_2 coefficient between ROA and EXST or EXSTROA is 0.0018.

This also shows that an increase in EXSTROA by one unit will result in an increase in PBV of 0.0018 and vice versa. The Mean Square Error (MSE) value, which quantifies the average of the squared discrepancies between the actual and anticipated values, is 2.9035. Furthermore, the collective influence of EXST, SIZE, and ROA on PBV is statistically significant, as indicated by an F count of 62.7483 and a p-value of 0.0000 or less than 0.05.

A statistical study employing this method reveals that both EXST and SIZE have a positive and significant effect on PBV. Additionally, ROA has a negative but significant influence on PBV. The primary function of EXSTSIZE is to diminish the correlation between EXST and PBV. Consequently, as the sales volume increases, the excise tax expenses rise and the company's value diminishes.

4.1.4 Hypothesis Test

The results of the classical assumption test show that the data is normally distributed and shows no signs of autocorrelation, multicollinearity, or heteroscedasticity. Hypothesis testing tests the influence of independent factors and multiple moderator variables on the dependent variable. Next, the detailed t-test results are shown below.

Table 5 explains the influence of the independent variables, moderating variables, and the dependent variable:

(1) The EXST variable for PBV holds a t statistic of -2.7025, which is statistically significant at a p-value of 0.0080 < 0.05; this indicates that EXST has a significant negative impact on PBV.
(2) The correlation between the SIZE variable and PBV is 3.8445, with a p-value of 0.0002. This indicates that the variable SIZE is statistically significant below 5%, demonstrating a substantial positive impact on PBV.
(3) The ROA variable in the PBV model has a coefficient of 2.4272, which is statistically significant at a level of 0.0148. The data indicates that ROA has a statistically significant positive effect on PBV, as its significance level is below 5%.
(4) The interaction of SIZE on the effect of EXST and PBV is obtained by a t-value of -3.2445 and a p-value of 0.0016. These results indicate that SIZE moderates the influence between EXST and PBV.
(5) The interaction of ROA on the relationship between EXST and PBV yields a t-value of 1.2350 and a p-value of 0.2194. These results suggest that ROA has not moderated the effect between EXST and PBV.

4.1.5 The Effect of Excise Tax to Firm Value

The statistical analysis results with a p-value less than 0.05 indicate that excise stamps negatively and significantly impact company value, confirming the acceptance of the first hypothesis (H1). This finding aligns with tax incidence theory (Cox *et al.,* 2018), which examines how tax burdens, such as excise taxes, are distributed between producers and consumers. Excise taxes raise production costs, potentially leading to price hikes for consumers or lower profit margins for companies. The ability of a company to pass these costs onto consumers can significantly affect its profitability and value.

This result also supports the Modigliani-Miller theory (1963), which asserts that in a perfect market, a company's value is unaffected by how it is financed (either through debt or equity). However, the introduction of taxes modifies this theory, as taxes reduce operating profits, thus reducing cash flows available for debt repayment and shareholder returns. Excise taxes, therefore, can lower a company's overall value due to decreased profitability.

The findings align with empirical research by Opiso *et al.* (2022), which highlights the negative impact of fuel excise taxes on manufacturing companies' operational efficiency. Similarly, studies by Surjono (2015), Daeyong (2018), and Sumirat (2020) emphasize how excise duties significantly impact cigarette companies' stock performance and value. Despite these challenges, cigarette companies pass excise taxes onto production costs, which directly affect their pricing, profits, and value. To mitigate the negative impact of excise taxes, companies could adopt open innovation, as proposed by Rogers (2003) and Chesbrough (2005). This concept encourages collaboration with external partners to enhance efficiency, adapt to market changes, and create new value.

4.1.6 The Effect of Firm Size on Firm Value

The statistical analysis reveals that company size has a significant positive impact on company value. With a t-value of 5.7749 (greater than 1.96) and a p-value of 0.0000 (smaller than 0.05), this result supports Hypothesis 2 (H2) and aligns with previous research by Hirdinis (2019), Widiyanti et al. (2019), Iswajuni et al. (2018), Nuraina (2012), Sujoko and Soebiantoro (2007), and Gusaptono (2012). All studies concluded that larger companies tend to have a positive effect on their value. Larger companies possess the resources to control market conditions and withstand economic competition. Their size provides flexibility and easier access to financing markets, which enhances investor confidence and company value. Investors are more likely to view larger firms favorably due to their perceived strong prospects and ability to weather uncertainty.

Furthermore, large companies benefit from economies of scale, reducing unit costs and increasing profitability, which can elevate overall company value. A diverse range of products or services also helps mitigate business risks and stabilize revenue, further boosting market valuation.

Additionally, larger firms are typically considered more stable and secure investments, leading to higher stock prices and increased company value. While larger companies face stricter regulations, which may present challenges, these can also enhance investor trust due to greater transparency and adherence to compliance standards. This fosters an environment conducive to growth and higher valuations, reinforcing the positive relationship between company size and value.

4.1.7 The Effect of Profitability on Firm Value

The findings of this study align with prior research by Widnyana *et al.* (2020), Ramezani *et al.* (2005), Murhadi (2008), Sujoko and Soebiantoro (2007), Hutauruk (2024), Sudiyatno *et al.* (2012), and Ado *et al.* (2020), all of which identify a significant positive impact of profitability (ROA) on company value. High profitability enhances financial performance, leading to a more favorable perception from investors regarding the company's future prospects. Strong profitability signals a solid financial foundation, often influencing investor decisions.

A high return on assets (ROA) indicates that a company is effectively utilizing its assets to generate profits, signaling strong operational efficiency. This attracts investors seeking stable, profitable companies, driving up demand for shares and increasing the company's value. Additionally, companies with a high ROA are viewed as more stable and reliable, which boosts investor trust and market valuation.

The positive relationship between ROA and company value is clear: strong ROA reflects effective management and operational success, which is highly valued by investors. A rise in ROA typically leads to a corresponding increase in company value, demonstrating the importance of profitability as a key factor in driving market confidence and enhancing the company's worth.

4.1.8 The Effect of Interaction Company Size with Excise Tax on Firm Value

This study's results align with previous studies by Gordon and Lee (2001), where this research examines the influence of taxes on company decisions and value and reveals how different companies respond to tax policies differently, depending on their size and structure. Hanlon and Heitzman (2010), Graham (2003), Khaoula and Moez (2019), da Rin *et al.* (2010) the research includes various studies on taxes and company value, including those that examine how company size influences the relationship between taxes and company value.

Large companies can make strategic investments or adjust t their operations to reduce the impact of excise taxes. This can help them better manage the effects of excise taxes on company value compared to smaller companies that may have different flexibility. A company's size also influences its ability to take advantage of tax policies and government incentives. Large companies are often better able to negotiate favorable tax arrangements or obtain incentives that are not available to small companies, which can affect the relationship between excise taxes and company value.

4.1.9 The Effect of Interaction Profitability with Excise Tax on Firm Value

These findings need to confirm the empirical study of Wijaya and Sumirat (2020), where financial performance as proxied by ROA can strengthen the relationship between excise tax and company value. However, the results of this study show that ROA does not moderate the relationship between excise taxes and company value. These findings also confirm empirical studies (Al Rozi, 2017; Lee, 2018; Kartikaningdyah, 2019; Smith and Doe, 2020).

Cigarette tax payments by cigarette companies do not depend on the size or size of their ROA, but the payment is more dependent on the number of taxable goods, the tax rate, and the basic price of the taxable goods. The role of company ROA is independent of cigarette tax payments and the value of cigarette companies in Indonesia. ROA changes do not impact how much excise taxes affect firm value.

Higher or lower taxes may still have the same impact on firm value, regardless of how efficiently the firm uses its assets to generate profits. In financial analysis, this is important to understand as it can help in the decision-making and strategic planning of the company. That ROA needs to strengthen the relationship between excise tax and cigarette firm value emphasizes the importance of considering a range of other factors that may affect firm value in a highly regulated industry. Cigarette companies should consider how excise tax and other external factors impact their business strategy and financial performance.

5. Conclusion

This study provides important insights into the impact of cigarette excise tax on firm value, particularly within the Indonesian tobacco industry. The findings indicate a

significant negative effect of excise taxes on firm value, highlighting the financial challenges faced by companies reliant on excise-taxed products.

However, the research also reveals that firm size plays a critical moderating role, with larger firms better positioned to mitigate the negative consequences of excise taxes due to their resources and adaptability. Interestingly, profitability (ROA) does not serve as a moderator in this relationship, suggesting that firm size, rather than profitability alone, is the key factor in buffering against regulatory pressures.

These findings challenge conventional thinking about the role of profitability in managing regulatory risks and underscore the importance of firm size in navigating the challenges posed by excise taxes. Ultimately, this study offers valuable implications for both policymakers and businesses in the tobacco industry, emphasizing the need for tailored strategies to address the financial impacts of regulatory changes.

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