cisdi
Center for Indonesia's Strategic Development Initiatives

THE MACROECONOMIC IMPACTS OF TOBACCO TAXATION IN INDONESIA: 2025 UPDATE

Author:

Muhammad Zulfiqar Firdaus, Fariza Zahra Kamilah, Beladenta Amalia , Muhammad Anugrah Saputra, Sofwatun Nida, Usman, I Dewa Gede Karma Wisana



Center for Indonesia's Strategic Development Initiatives (CISDI)
2026

The Macroeconomic Impacts of Tobacco Taxation in Indonesia: 2025 Update

Muhammad Zulfiqar Firdaus

Fariza Zahra Kamilah

Beladenta Amalia

Muhammad Anugrah Saputra

Sofwatun Nida

Usman

I Dewa Gede Karma Wisana

Center for Indonesia's Strategic Development Initiatives (CISDI), 2026

Suggested citation:
Center for Indonesia's Strategic Development Initiatives. (2026). *The Macroeconomic Impacts of Tobacco Taxation in Indonesia: 2025 Update*. Jakarta: CISDI.

Funding Information:
Center for Indonesia's Strategic Development Initiatives (CISDI) is funded by the Economics for Health program, a research project housed in the Department of Health, Behavior & Society at the Johns Hopkins Bloomberg School of Public Health, to conduct economic research on tobacco taxation in Indonesia. Johns Hopkins University is a partner of the Bloomberg Philanthropies Initiative to Reduce Tobacco Use (bloomberg.org). The views expressed in this document cannot be attributed to, nor can they be considered to represent, the views of John Hopkins University or Bloomberg Philanthropies.

Cover design and document layouting:
Ika Purwaningtyas

TABLE OF CONTENTS

List of content ii

List of tables iii

List of figures iii

Executive Summary iv

1. Introduction 2

2. Policy Context and Literature Review 4

2.1 Overview of Cigarette Industry in Indonesia 4

2.2 Cigarette Tax in Indonesia 6

2.3 The Impacts of Cigarette Excise Tax Increase on Various Indicators 7

3. Data 9

4. Analytical Framework 11

4.1 Estimating Cigarette Price Changes 12

4.2 Estimating Changes in Demand 13

4.3 Estimating Additional Government Revenue 15

4.4 Input Output (IO) Analysis 16

4.5 Estimating the Macroeconomic Impacts 17

5. Result 20

5.1 Intersectoral linkage between cigarette and other sectors 20

5.1.1 IO structure of the cigarette sector 20

5.1.2 Output multiplier 21

5.1.3 Income multiplier 22

5.1.4 Employment multiplier 24

5.2 Macroeconomic impacts of cigarette excise tax reform 25

5.2.1 The impact on consumption and tax revenue across scenarios 25

5.2.2 Net Macroeconomic Impacts Across Scenarios 29

5.2.3 Impacts under the Highest Net Economic Gain Scenario 31

5.2.4 Comparison with the 2021 macroeconomic impact study 31

5.2.5 Labor transition potential from the tobacco sector 33

6. Discussion 35

Appendix 1. Summary of the IO tables (55 Sectors) 40

Appendix 2. Elasticity sensitivity analysis 43

Appendix 3. Allocation of government spending scenario (C, D, and E) 45

LIST OF TABLES

Table 1. Cigarette excise tiers and tariffs in 2026 7
Table 2. Data sources for updating the 2020 IO table 9
Table 3. Cigarette data 10
Table 4. Own-price and Cross-price Elasticities Used in the Main Analysis 14
Table 5. Input Output Terminology 16
Table 6. Macroeconomic Simulations 17
Table 7a. IO structure of the cigarette sector (input) 20
Table 7b. IO structure of the cigarette sector (output) 21
Table 8. Output multiplier of the cigarette sector 22
Table 9. Top five sectors affected by changes in the final demand of the cigarette sector based on Type-II output multiplier 22
Table 10. Income multiplier of the cigarette sector 23
Table 11. Top five sectors affected by changes in the final demand of the cigarette sector based on Type-II income multiplier 23
Table 12. Employment multipliers by cigarette type (persons per Rp 10 billion of output) 24
Table 13. Sectoral composition of the Type-II employment multiplier for the cigarette subsectors 25
Table 14. Potential destination sectors for labor transition from the tobacco sector 33
Table A1. Summary of the IO tables 40
Table A2.1 Sensitivity of Estimated Impacts to Alternative Elasticity Assumptions 43
Table A2.2 Impacts using 2020–2024 SUSENAS elasticities across alternative excise tax increases under comprehensive tier simplification 44
Table A3.1 Allocation of government spending under scenario C (business as usual) 45
Table A3.2 Allocation of government spending under scenario D.I (health-related sectors) 47
Table A3.3 Allocation of government spending under scenario D.II (health financing and service delivery) 49
Table A3.4 Allocation of government spending under scenario E (social assistance program) 51

LIST OF FIGURES

Figure 1. Cigarette sales and production 4
Figure 2. Market Share of Cigarette Production (2019 - 2024) 6
Figure 3. Analytical Framework 11
Figure 4. Cigarette excise tax reform scenarios 12
Figure 5. Additional tax revenue and change in cigarette demand across scenarios 26
Figure 6. Change in demand by cigarette type across scenarios 28
Figure 7. Cigarette excise tax reform impacts: Output, Income, and Employment 30
Figure 8. Decomposition of net impact 31
Figure 9. Net macroeconomic impacts in the 2021 study and the 2025 update (nominal terms) 32

EXECUTIVE SUMMARY

Over the past decade, Indonesia has implemented several cigarette excise tax reforms, including increases in excise tax rates and simplification of the excise tier structure. Nevertheless, cigarettes remain affordable, and policy discussions continue to be shaped by concerns that higher tobacco taxes may reduce employment and weaken economic performance. These concerns, however, mainly focus on the relationship between higher cigarette excise taxes, lower cigarette demand, and the effects on sales and economic activity within the tobacco sector, without fully considering the broader economy-wide effects of the reform.

This study assesses the economy-wide impacts of cigarette excise tax reform in Indonesia using an Input-Output (IO) analysis. The study evaluates twelve policy scenarios combining different excise tax increases and degrees of excise tier simplification, along with four alternative government revenue allocation schemes. The analysis examines how cigarette excise tax reform affects cigarette consumption, government revenue, economic output, aggregate income, and employment across the economy.

The results show that cigarette excise tax reform generates positive net macroeconomic outcomes across all simulated scenarios. Higher cigarette excise taxes reduce cigarette consumption while increasing government revenue and generating net gains in economic output, aggregate income, and employment. The analysis also shows that excise tier simplification substantially improves the effectiveness of cigarette taxation, resulting in larger reductions in cigarette consumption and higher government revenue for any given increase in excise tax rates.

Among the scenarios examined, the largest estimated net macroeconomic gains occur with a 50 percent increase in excise tax rates combined with tier simplification for both hand-rolled and machine-made cigarettes. Under this scenario, economic output is estimated to increase by approximately Rp 315.1 trillion and aggregate household income by Rp 81.7 trillion, while employment increases by approximately 1.14 million jobs.

Overall, the findings demonstrate that cigarette excise taxation should be viewed not only as a public health intervention, but also as a fiscal and economic policy instrument. Well-designed excise tax increases, paired with continued simplification of the excise tier structure, can simultaneously reduce cigarette consumption, strengthen government revenue, and generate positive economy-wide economic outcomes.

KEY FINDINGS

- **Cigarette excise tax reform is a policy response to the rising economic burden of smoking.** The economic cost of smoking in Indonesia rose by 59 percent over six years, from Rp172 trillion in 2019 to Rp274 trillion in 2025, and is projected to reach Rp353 trillion by 2029 if smoking prevalence remains unchanged. Higher cigarette excise taxes raise prices and reduce consumption, thereby tackling the source of this burden.

- **Cigarette excise tax reform generates positive net macroeconomic outcomes across all simulated reform scenarios.** Higher cigarette excise taxes reduce cigarette consumption while increasing government tax revenue, aggregate income, total economic output, and employment.

- **Excise tier simplification substantially strengthens the effectiveness of cigarette taxation**. For any given increase in excise tax rates, simplifying Indonesia's cigarette excise tier structure consistently results in larger reductions in cigarette consumption and higher government revenue by reducing incentives for consumers to substitute toward lower-taxed cigarette products.

- **The most comprehensive reform scenario evaluated—a 50 percent increase in cigarette excise tax rates combined with simplification of the current eight-tier excise structure to four tiers—delivers the largest potential gains.** Under this scenario, cigarette consumption is projected to decline by 10.1 percent (roughly 32.2 billion fewer sticks per year), while generating approximately Rp109.6 trillion in additional tax revenue. The reform also produces the largest estimated macroeconomic gains, increasing total economic output by approximately Rp315.1 trillion, and aggregate income by Rp81.7 trillion.

- **The employment effects of cigarette excise tax reform are strongly positive overall.** Under the most comprehensive reform scenario, the economy is estimated to generate approximately 1.14 million additional jobs on a net basis. These findings suggest that, when paired with effective allocation of additional government revenue and targeted labor-transition and reskilling policies, cigarette excise tax reform can support net employment growth.

1
INTRODUCTION

Tobacco use remains a major public health challenge in Indonesia. According to the 2023 Indonesian Health Survey (*Survei Kesehatan Indonesia,* SKI), approximately 70 million Indonesians are active smokers, representing 31.9% of adults aged 18 years and older. Smoking prevalence remains particularly alarming among men, with 60.7% of adult males smoking compared with 1.3% of adult females, while 7.4% of adolescents aged 10–18 years are also active smokers.[1] These figures reflect the country's persistent tobacco epidemic and the urgent need for stronger tobacco control measures. Beyond its devastating health consequences, tobacco use also imposes a substantial economic burden on Indonesia. Recent estimates suggest that the economic burden of smoking rose 59% over six years, from Rp172 trillion in 2019 to Rp274 trillion in 2025, or around 1.1% of GDP, driven by rising healthcare costs and productivity losses. If smoking prevalence remains unchanged, this figure is projected to reach Rp353 trillion by 2029.[2] Given the persistently high smoking prevalence and the growing burden of non-communicable diseases (NCDs), reducing tobacco consumption has become an increasingly urgent public health and economic priority in Indonesia.

One of the key factors sustaining high cigarette consumption in Indonesia is the continued affordability of cigarettes. Although cigarette excise taxes have increased over the past decade, these increases have been inconsistent and have often been offset by rising incomes and persistent price differentials across cigarette products. Indonesia's complex, multi-tiered cigarette excise tax structure enables manufacturers to market cigarettes across a wide price range, allowing smokers to switch to cheaper brands rather than quit or reduce consumption when taxes rise.[3,4] These dynamics suggest that strengthening tobacco taxation requires not only regular excise tax increases but also simplifying the current multi-tiered excise system to narrow price gaps and improve tobacco taxation's effectiveness as a public health measure.

Despite substantial global evidence that tobacco taxation is one of the most effective tobacco control policies,[5] concerns about its potential economic consequences remain prominent in Indonesia's policy debates. In particular, discussions of the economic effects of higher cigarette excise taxes often focus on concerns that reducing cigarette demand could decrease tobacco sector output and employment. However, the economy-wide implications of excise tax reform extend beyond changes in cigarette demand and tobacco-sector activity. Changes in household spending following the reform, together with the allocation of additional government revenue generated from higher excise taxes, can affect economic activity and employment across other sectors of the economy. When these economy-wide effects are accounted for, previous studies have found that tobacco tax reforms have neutral or positive net economic impacts while effectively reducing tobacco consumption in Indonesia[6] Consistent with this evidence, our previous macroeconomic analysis found that increasing tobacco taxes would not harm the national economy. Instead, the analysis projected increases in national output, aggregate household income, along with reductions in cigarette consumption.[7]

Building on our 2021 macroeconomic analysis, this study provides updated estimates of the economic impacts of tobacco excise tax reform using more recent data and an enhanced analytical framework. First, the analysis uses an updated Indonesian Input-Output (IO) Table to better reflect the economy's current structure. Second, the study incorporates several methodological improvements by disaggregating the cigarette sector into three distinct subsectors—machine-made kretek cigarettes (*Sigaret Kretek Mesin,* SKM), hand-rolled kretek cigarettes (*Sigaret Kretek Tangan,* SKT), and machine-made white cigarettes (*Sigaret Putih Mesin,* SPM). Third, whereas our previous study focused primarily on excise tariff increases, this study also evaluates the macroeconomic impacts of cigarette excise tier simplification, either as a standalone reform or in combination with excise tax increases. By incorporating more recent data, methodological refinements, and a broader range of policy scenarios, this study provides more recent and policy-relevant evidence to inform tobacco excise tax reform in Indonesia.

The remainder of this report is organized as follows. Section 2 provides an overview of Indonesia's cigarette industry and tax policy, and reviews existing literature on the impacts of increased cigarette taxes on various indicators. Section 3 describes the data used in the analysis, while Section 4 presents the analytical and simulation framework. Section 5 presents the intersectoral linkage analysis of Indonesia's cigarette industry, followed by the simulation results. Finally, Section 6 concludes by summarizing the main findings and discussing their policy implications.

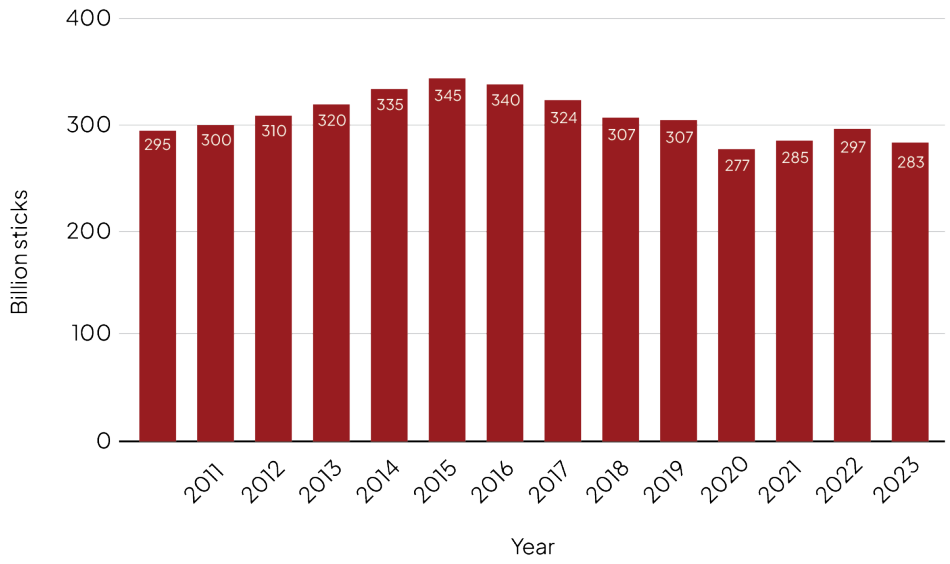
2
POLICY CONTEXT AND LITERATURE REVIEW

2.1 Overview of cigarette industry in Indonesia

Despite efforts to strengthen tobacco control, including repeated cigarette excise tax increases and two rounds of tier simplification over the past decade, Indonesia remains one of the world's largest cigarette markets[8] Indonesia's cigarette industry is involved in both sales and production. Euromonitor International sales data for 2010–2023 indicate that annual cigarette sales have remained exceptionally high, fluctuating around 300 billion sticks over the past decade. Sales increased from 295 billion sticks in 2010 to a peak of 345 billion sticks in 2015, before gradually declining to 283 billion sticks in 2023 (Figure 1.a). Official administrative data from the Ministry of Finance, available for 2019–2024, similarly indicate that cigarette production remained consistently above 300 billion sticks annually, peaking at 356.9 billion sticks in 2021 before moderating to 317.8 billion sticks in 2024 (Figure 1.b). Although both cigarette sales and production have shown signs of moderation in recent years, their persistently high levels underscore the enormous scale of Indonesia's cigarette market and the continuing challenge of reducing cigarette consumption.

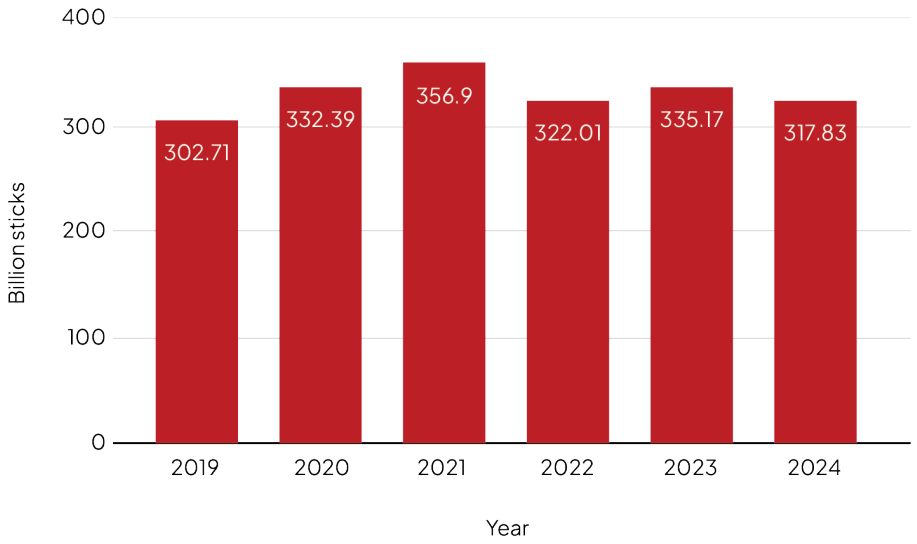
Figure 1. Cigarette sales and production

Panel a. Cigarette sales (billion sticks)



Source: Euromonitor International (2025)

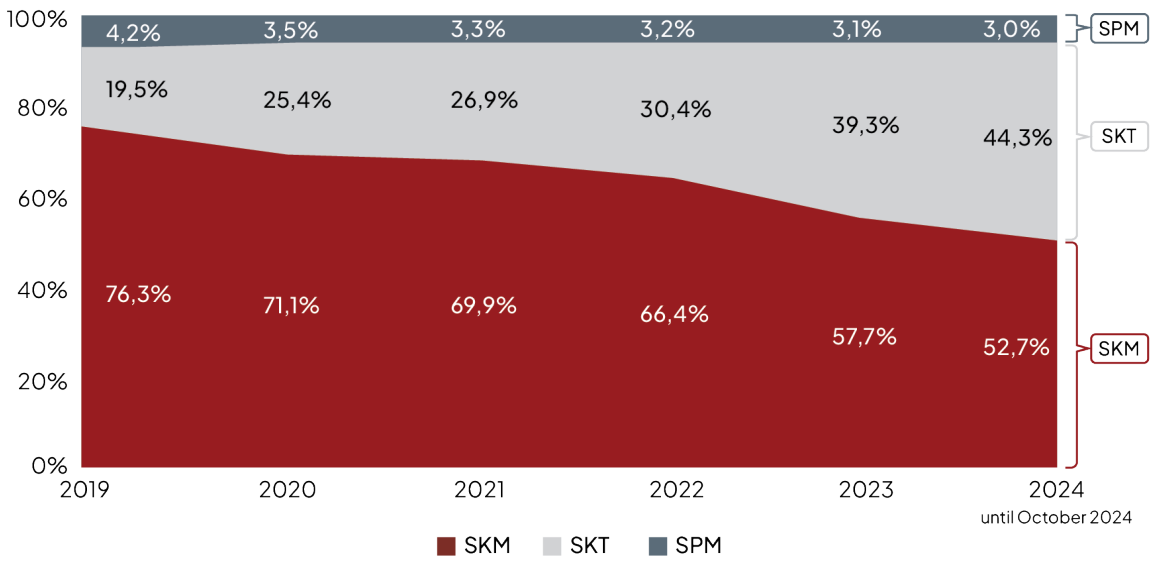
Panel b. Cigarette production (billion sticks)



Source: Ministry of Finance of Republic Indonesia, 2024

Indonesia's cigarette industry is dominated by kretek cigarettes, a distinctive blend of tobacco and cloves that accounts for the vast majority of the country's cigarette production and consumption. Kretek cigarettes are produced in two main forms: machine-rolled (SKM) and hand-rolled (SKT). SPM, which does not contain cloves, represents only a small share of the domestic market. Although SKM remains the largest cigarette category, Indonesia's cigarette market composition has shifted considerably in recent years. Ministry of Finance production data show that SKM's combined market share declined from 76.3 percent in 2019 to 52.7 percent in 2024, while SKT's share increased from 19.5 percent to 44.3 percent over the same period. The decline in SKM and increase in SKT share may suggest a market shift in which kretek consumers moved toward cheaper SKT brands. This pattern aligns with evidence that producers respond strategically to the tiered excise structure by positioning brands in lower-tax tiers and price segments.[9,10] At the same time, smokers switch to cheaper products rather than quit.[8] This downtrading behavior underscores the need to simplify the excise tier structure and enforce the minimum retail price more strictly. In contrast, SPM consistently accounted for only around three to four percent of total cigarette production (Figure 2). These figures illustrate the increasingly diverse composition of Indonesia's cigarette industry, with substantial differences in production technologies, labor intensity, and market shares across cigarette categories. These distinctions matter because the cigarette excise tax system differentiates products by cigarette type, so excise tax reform may.

Figure 2. Market share of cigarette production (2019 - 2024)



Source: Authors' re-calculation based on the Ministry of Finance's cigarette production data.

2.2 Cigarette tax in Indonesia

Indonesia's cigarette taxation system comprises of three tax components—(1) cigarette excise, (2) a provincial cigarette tax, and (3) value-added tax (VAT)—along with a government-mandated minimum retail price (*Harga Jual Eceran*; HJE). Cigarette excise is the largest component of the overall tax burden on cigarettes and is levied per stick under Law No. 39 of 2007 on Excise. In addition, athe government imposes a provincial cigarette tax of 10 percent of the cigarette excise, while VAT is effectively levied at 9.9% of the HJE under Minister of Finance Regulation (PMK) 11 of 2025. Based on the baseline data used in this study (Table 1), total cigarette taxes (excise, provincial cigarette tax, and VAT) account for approximately 58 percent of the weighted average retail price, of which the excise alone accounts for about 44 percent. This remains well below the 75 percent total tax share WHO identifies as best practice in tobacco taxation,[5] and this low tax burden contributes to cigarettes' continued affordability in Indonesia.

Indonesia also has a complex cigarette excise tax structure in which excise tariff rates vary by cigarette type, production method, and manufacturers' annual production scale. As described earlier, cigarette products are often classified into SKM, SKT, and SPM, while manufacturers are further classified into different excise tax tiers based on their annual production volume. Currently, Indonesia's cigarette excise system consists of eight tax tiers, following a series of reforms that have gradually simplified the tariff structure in recent years. Table 1 presents the applicable cigarette excise tariff rates for each tier, effective in 2026.

Table 1. Cigarette excise tiers and tariffs in 2026

Type	Tier	Manufacturer Annual production volume	Excise Tariff (Rp/stick)	HJE (Rp/stick)
Machine-made white cigarette (SPM)	I	> 2 billion sticks	1,336	2,495
	II	≤ 2 billion sticks	794	1,565
Machine-made kretek cigarette (SKM)	I	> 3 billion sticks	1,231	2,375
	II	≤ 3 billion sticks	746	1,485
Hand-rolled kretek cigarette (SKT)	IA	> 2 billion sticks	483	2,170
	IB	> 500 million – 2 billion sticks	378	1,555
	II	> 50 million – 500 million sticks	223	995
	III	≤ 50 million sticks	122	860

Source: Ministry of Finance of the Republic of Indonesia. (2024). Minister of Finance Regulation (PMK) No. 97 of 2024 on Tobacco Excise Tariffs.
Note: The current cigarette excise tariff rates and HJE are set under the latest Minister of Finance Regulation (PMK No. 97 of 2024), effective 1 January 2025 and applicable in 2026. Under this regulation, the government maintained cigarette excise tariff rates at their 2024 levels while increasing the HJE across all cigarette categories in 2025. The government made no further adjustments to either the excise tariff rates or the HJE in 2026.

In recent years, Indonesia has gradually simplified its multi-tiered excise tax structure. The government reduced the number of excise tax tiers from 12 to 10 in 2020, then from 10 to eight in 2022, as part of efforts to improve tax administration and strengthen tobacco control. Despite these reforms, Indonesia still maintains one of the most complex cigarette excise tax systems in the world. A growing body of evidence suggests that a complex multi-tiered excise tax structure undermines the effectiveness of tobacco taxation. By allowing cigarettes to be taxed at substantially different rates across tiers, the system incentivizes both manufacturers and consumers to shift toward lower-taxed products. Previous studies show that manufacturers may adjust production strategies to stay in lower-tax tiers. At the same time, smokers may respond to tax increases by switching to cheaper cigarette brands rather than quitting or reducing consumption.[11] More recent evidence from our cigarette affordability study further suggests that Indonesia's complex cigarette excise structure has kept cigarettes relatively affordable despite repeated excise tax increases over the past decade, reinforcing the importance of continued excise-tier simplification as part of future tobacco tax reform.[3]

2.3 The impacts of cigarette excise tax increase on various indicators

Globally, substantial evidence shows that increasing cigarette excise taxes is one of the most effective policy instruments for raising retail prices, reducing affordability, and discouraging cigarette consumption.[12–14] In Indonesia, Barber et al. estimated that a 13 percent increase in cigarette excise taxes could reduce the number of smokers by approximately four percent.[15] More recently, previous study from CISDI showed that cigarette affordability remains a key determinant of

cigarette demand in Indonesia; a 10 percent decline in affordability reduces cigarette consumption by 7.7%.[3]

Higher cigarette prices also influence smoking behavior by reducing smoking initiation and encouraging smoking cessation. Our previous studies found that increases in the cigarette excise tax significantly reduce the probability of smoking initiation among Indonesian youth,[16] while also increasing the likelihood of smoking cessation among adult smokers.[17] Notably, the estimated effect was found to be more pronounced in reducing smoking initiation than in promoting smoking cessation, suggesting that tobacco taxation is particularly effective in preventing young people from taking up smoking. Together, these findings reinforce the role of tobacco excise taxation as one of the most effective population-level tobacco control interventions.

Beyond changes in smoking behavior,increases in cigarette excise taxes generate substantial health and fiscal benefits. Lower cigarette consumption reduces the incidence of smoking-related diseases, smoking-attributable mortality, and healthcare expenditures, while at the same time increasing government excise revenues.[18–20] Consequently, tobacco taxation is also widely recognized as one of the most cost-effective public health interventions, improving population health while strengthening government fiscal capacity.

The impacts of cigarette excise taxation also extend beyond the health sector to the broader economy. Reductions in cigarette consumption lead households to reallocate spending to other goods and services. At the same time, additional government revenue from higher excise taxes may fund public programs or other productive investments[20] These changes affect production, household aggregate income, employment, and value added across sectors through intersectoral linkages. Consequently, more studies have used economy-wide analytical approaches, including input-output (IO) and computable general equilibrium (CGE) models, to evaluate the macroeconomic impacts of tobacco taxation.[6,21,22]

CISDI's 2021 macroeconomic impacts study provided the first comprehensive assessment of tobacco taxation in Indonesia using an IO framework.[7] The study incorporated three major transmission channels of tobacco excise taxation: reductions in cigarette consumption, adjustments in household non-cigarette expenditure, and additional government expenditure financed by higher tobacco excise revenues. The findings showed that additional government spending generated economic activity in non-cigarette sectors, resulting in positive net impacts on national output, aggregate income, and employment.

While previous studies have consistently shown that tobacco excise taxation reduces smoking, improves public health, strengthens government revenues, and generates positive macroeconomic outcomes, Indonesia's cigarette market and excise tax system have continued to evolve. Recent changes in cigarette production patterns, the simplification of the cigarette excise tier structure, and the availability of newer data warrant an updated assessment of the macroeconomic impacts of tobacco taxation.

3
DATA

This study utilizes the 2020 Input-Output (IO) Table published by Statistics Indonesia (*Badan Pusat Statistik*, BPS) as the primary analytical framework. The original IO table, which comprises 185 economic sectors, was aggregated into 52 sectors using a concordance table, that combines detailed industries into broader sectoral groups based on the BPS sector classification; for example, individual crop sectors such as rice, maize, and soybean production were aggregated into a single agriculture sector. This aggregation level was needed to match Indonesia's 2025 GDP data used as control totals, which are available only at the 52–sector level.

Although the 2020 IO table provides the most recent benchmark input-output structure available for Indonesia, it does not fully reflect the economy's current size and composition. We therefore updated the 52–sector 2020 IO table to represent the Indonesian economy in 2025 using the RAS method, which updates an existing IO matrix to reflect new economic conditions while preserving the benchmark table's underlying structure.[23] The update uses 2025 economic data as control totals to adjust intermediate sales and input use across sectors. The resulting 2025 IO table provides updated estimates of key economic aggregates, including sectoral output, gross value added, household consumption, labor income, employment, government expenditure, exports, and imports. Table 2 summarizes the data sources and variables used to update the 2020 IO table.

Table 2. Data sources for updating the 2020 IO table

No.	Data	Year	Source	Utilization
1.	GDP by sector (52 sectors) at current market price	2025	Statistics Indonesia	Updating the value added by sector
2.	GDP by expenditure at current market price	2025	Statistics Indonesia	Updating the total import and final demand values
3.	Indonesian labor force statistics	2025	Statistics Indonesia	Updating the employment and income data
4.	Cigarette production data	2024 (Dec)	Ministry of Finance	Disaggregating cigarette sector

Source: Authors' compilation

To better represent the heterogeneous structure of Indonesia's cigarette industry, we further disaggregated the aggregated cigarette sector into three subsectors: SKM, SKT, and SPM. The disaggregation primarily draws on recent cigarette production and market-share data from the Ministry of Finance, allowing the model to distinguish these three policy-relevant cigarette categories used in Indonesia's cigarette excise tax system.

The construction of the three cigarette subsectors also incorporates information from the 2018 World Bank study on the economics of tobacco taxation and employment in Indonesia.[6] In particular, we used evidence on the distribution of employment across SKM, SKT, and SPM production to represent each cigarette subsector's labor intensity within the disaggregated input-output framework. Combining recent Ministry of Finance production data with evidence on employment characteristics provides a more representative depiction of Indonesia's cigarette manufacturing industry while maintaining consistency with the benchmark input-output table.

After disaggregating the cigarette manufacturing sector, the final input-output database used in this study consists of 55 economic sectors: 52 aggregated sectors from the benchmark BPS input-output table and three cigarette manufacturing subsectors (SKM, SKT, and SPM). This enhanced sectoral representation enables the model to simulate economy-wide impacts of tobacco excise reforms separately across the three major cigarette categories.

To estimate the impacts of cigarette excise tax increases on cigarette prices and government revenues, this study combines several data sources. Cigarette excise tariff rates are obtained from the latest Minister of Finance Regulation (PMK No. 97 of 2024), which specifies the applicable excise tariff for each cigarette excise tier. Baseline retail cigarette prices (*Harga Transaksi Pasar*, HTP) are derived from the cigarette price monitoring dataset collected by CHED ITB Ahmad Dahlan in 2023 and subsequently inflation-adjusted to reflect the estimated average retail prices in 2025 for each cigarette type and excise tier. Because publicly available sales data disaggregated by cigarette excise tier are unavailable, we use annual cigarette production data published by the Ministry of Finance as a proxy for domestic cigarette sales. Table 3 summarizes the cigarette excise tariff rates, baseline retail prices, and production volumes used in the simulation.

Table 3. Cigarette data

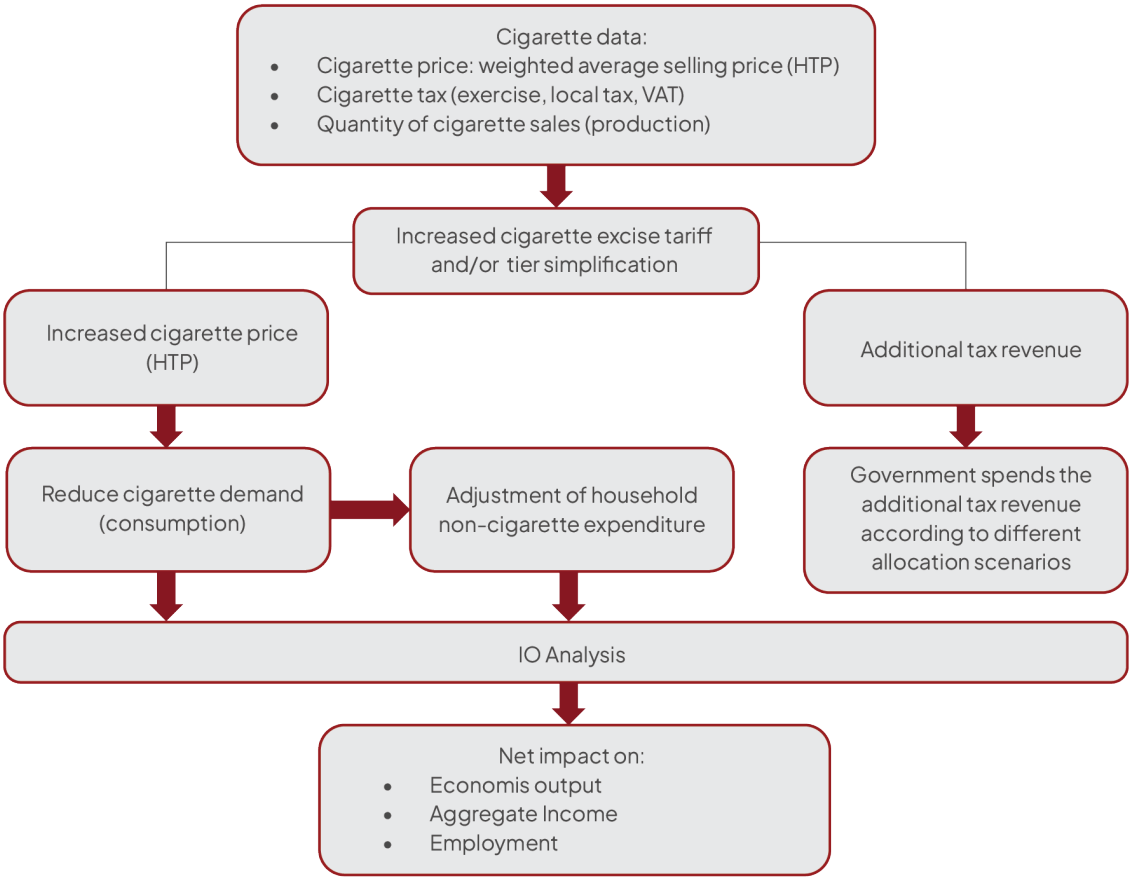
Type	Tier	Excise Tariff (Rp/stick)	Average retail price (Rp/stick)	Production (Billion sticks)
Machine-made white cigarette (SPM)	I	1,336	2,199	3
	II	794	1,591	6
Machine-made kretek cigarette (SKM)	I	1,231	2,175	97
	II	746	1,370	70
Hand-rolled kretek cigarette (SKT)	IA	483	1,837	19
	IB	378	1,444	41
	II	223	1,187	15
	III	122	898	67

Source: CHED ITB Ahmad Dahlan cigarette price monitoring data (2023; inflation-adjusted to 2025); Minister of Finance Regulation (PMK) No. 97 of 2024 on Tobacco Excise Tariffs; and Ministry of Finance cigarette production data (December 2024).

4
ANALYTICAL FRAMEWORK

This study estimates the economy-wide impacts of cigarette excise tax increases on economic output, household income, employment, and government revenue using an Input-Output (IO) modelling framework. Figure 3 illustrates the analytical framework used in this study, which has four main steps. First, the study translates cigarette excise tax scenarios into changes in cigarette prices and government excise revenues. Second, the resulting price changes are used to estimate changes in cigarette consumption based on cigarette demand elasticities. Third, changes in household cigarette expenditure are assumed to trigger an adjustment in household spending on non-cigarette goods and services. Fourth, we assume additional government revenues from higher cigarette excise taxes are reallocated to government expenditure according to the specified government expenditure scenarios.

Figure 3. Analytical framework



Cigarette excise tax increases affect the economy through three principal transmission channels: (1) changes in cigarette consumption, (2) adjustments in household expenditure, and (3) additional

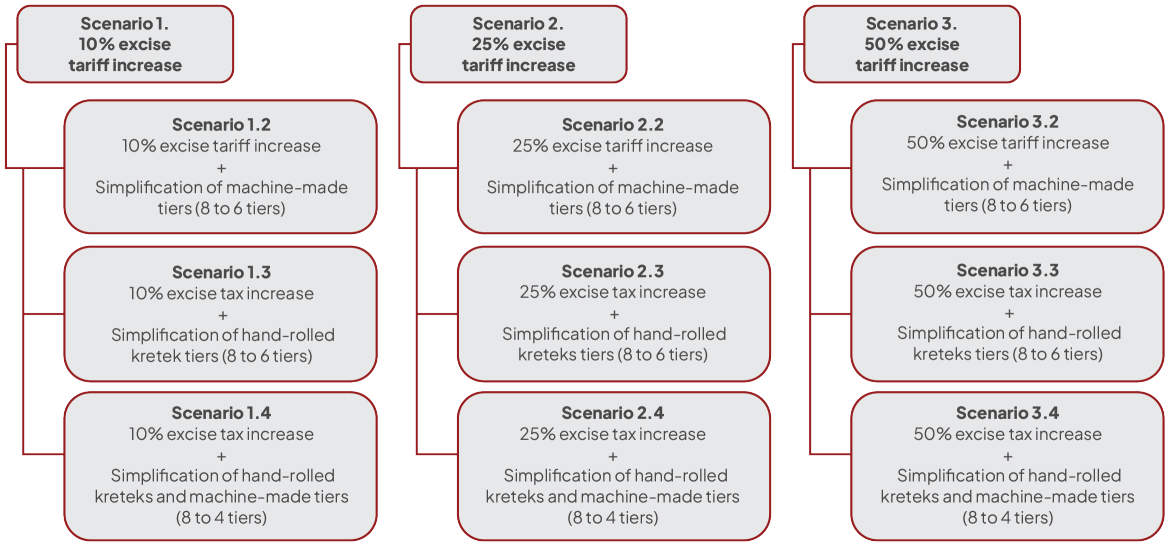
government expenditure financed by higher cigarette excise revenues. These channels change final demand across industries, which then propagates through the economy via the intersectoral linkages captured by the Input-Output framework. The updated 55-sector Input-Output model is used to evaluate the resulting economy-wide effects and estimate the impacts of cigarette excise tax increases on total output, aggregate household income, and employment under alternative policy scenarios.

4.1 Estimating cigarette price changes

The first stage of the analysis translates alternative cigarette excise tax reforms into changes in retail cigarette prices. The analysis first defines a series of cigarette excise tax reform scenarios. Subsequently, it estimates the resulting changes in retail cigarette prices, which serve as the primary inputs for estimating the changes in demand.

Figure 4 presents the cigarette excise tax reform scenarios evaluated in this study. The analysis considers 12 policy scenarios, that combine two dimensions of reform: changes in cigarette excise tariff rates and changes in the cigarette excise tier structure. Three excise tariff increases—10 percent, 25 percent, and 50 percent—are evaluated under four alternative excise structures: (1) no tier simplification, (2) simplification of machine-made cigarette (SKM and SPM) tiers, (3) simplification of hand-rolled cigarette (SKT) tiers, and (4) simultaneous simplification of both machine-made and hand-rolled cigarette tiers. This design enables the analysis to evaluate both the independent effects of increasing cigarette excise tariff rates and simplifying the excise tier structure, as well as their combined effect.

Figure 4. Cigarette excise tax reform scenarios



For each policy scenario, we simulate retail cigarette prices at the level of individual cigarette excise tariff tiers. Retail prices are estimated as the sum of the producer net-of-tax price (*NT*), cigarette excise (*E*), provincial cigarette tax (*LT*), and value-added tax (*VAT*), as presented in Equation (1) as

follows:

$$P_{ik} = NT_{ik} + E_{ik} + LT_{ik} + VAT_{ik} \qquad (1)$$

where i denotes the cigarette type (SKM, SKT, and SPM), while k denotes the excise tariff tier within each cigarette type, the analysis assumes 100% excise tax pass-through, implying that any increase in cigarette excise is fully reflected in retail cigarette prices. The producer net-of-tax price is assumed to remain constant across all policy scenarios. The provincial cigarette tax is recalculated as 10 percent of the applicable cigarette excise, while the value-added tax component is calculated as 9.9 percent of the tobacco retail selling price (HJE). This approach ensures that changes in all tax components remain internally consistent with Indonesia's cigarette taxation system.

Next, the simulated retail prices are subsequently aggregated into weighted average retail prices for each cigarette type using the production share of each excise tariff tier (w_{ik}) as weights, as shown in Equation (2) as follows:

$$\bar{P}_i^{\,s} = \sum_{k=1}^{K_i} w_{ik} P_{ik}^{s} \qquad (2)$$

Under the tier simplification scenarios, lower excise tiers are assumed to merge into the adjacent higher tier and be taxed at that higher tier's excise tariff. For machine-made cigarettes, the SKM I tier is merged with SPM I, and the SKM II tier with SPM II. For hand-rolled kretek cigarettes, SKT 1B is merged into SKT IA, while SKT III is merged into SKT II. When estimating the weighted-average retail price under the simplified tier structure, we assume production shares remain unchanged from the pre-reform distribution.

Finally, the percentage change in weighted average retail prices is estimated by comparing the simulated weighted average retail price under each reform scenario with the corresponding baseline retail price, as presented in Equation (3) as follows:

$$\Delta P_i = \left(\frac{\bar{P}_i^{\,s} - \bar{P}_i^{\,0}}{\bar{P}_i^{\,0}} \right) \times 100\% \qquad (3)$$

The estimated percentage changes in weighted average retail prices are the primary inputs for estimating changes in cigarette demand described in the next subsection.

4.2 Estimating changes in demand

The estimated changes in retail cigarette prices are subsequently translated into changes in cigarette demand. Because a price change in one cigarette type affects not only its own demand but may also alter the demand for other cigarette types through substitution effects, the change in demand is estimated as a function of both the own-price elasticity and the cross-price elasticities with respect

to other cigarette types, as shown in Equation (4)

$$\%\Delta Q_i = \underbrace{\varepsilon_{ii}\%\Delta P_i}_{\text{Own-price effect}} + \underbrace{\sum_{j\neq i}\varepsilon_{ij}\%\Delta P_j}_{\text{Cross-price effects}} \quad (4)$$

where $\%\Delta Q_i$ denotes the percentage change in demand for cigarette type i, $\%\Delta P_i$ denotes the percentage change in the retail price of cigarette type i, $\%\Delta P_j$ denotes the percentage change in the retail price of the other cigarette types $(j \neq i)$, ε_{ii} represents the own-price elasticity of demand for cigarette type i, and ε_{ij} represents the cross-price elasticity between cigarette types i and j. The main analysis uses own-price and cross-price elasticity estimates from CISDI's 2021 input-output study.[7] which estimated cigarette demand elasticities using pooled data from the 2017–2019 Indonesian National Socioeconomic Survey (SUSENAS) and Deaton's method.[23,24] The previous study estimated demand elasticities for two cigarette categories, kretek cigarettes and white cigarettes (SPM), which provide the basis for translating simulated retail price changes into changes in cigarette demand.

Because the present study distinguishes the cigarette market into three categories, machine-made kretek (SKM), hand-rolled kretek (SKT), and white cigarettes (SPM), we map the previous study elasticity estimates to the disaggregated cigarette categories used in the input-output model. Specifically, we assume the estimated own-price elasticity for kretek cigarettes applies equally to SKM and SKT. In contrast, the estimated own-price elasticity for white cigarettes applies to SPM. Likewise,we assume the estimated cross-price elasticity between kretek and white cigarettes represents substitution between SPM and both SKM and SKT. Because the previous study did not estimate substitution between SKM and SKT, the present study parameterizes the corresponding cross-price elasticity using a scenario-based approach. Because SKM and SKT are the two largest cigarette categories in Indonesia and are more likely to substitute for one another than either is with white cigarettes, thewe assume cross-price elasticity between them is greater than the cross-price elasticity between either and white cigarettes. Table 4 presents the elasticity assumptions used in the main simulations.

Table 4. Own-price and cross-price elasticities used in the main analysis

Demand for	Price of SPM	Price of SKM	Price of SKT
SPM	-0.338	0.163	0.163
SKM	0.163	-0.800	0.350
SKT	0.163	0.350	-0.800

Note: We assume the own-price elasticity for SKM and SKT is identical and follows the elasticity estimated for kretek cigarettes in CISDI's 2021 macroeconomic impacts study. The own-price elasticity for SPM follows the estimated elasticity for white cigarettes. We assume the cross-price elasticities between kretek and white cigarettes estimated in the previous study represent substitution between SPM and both SKM and SKT. Because the previous study did not eestimate the cross price elasticity between SKM and SKT, we use the assumed cross-price elasticity 0.35 for the main analysis.

To assess the robustness of the findings, we conducted sensitivity analyses by varying both the own-price elasticities and the parameterized SKM–SKT cross-price elasticity. Specifically, we evaluated lower-bound, base-case, and upper-bound elasticity scenarios to assess how sensitive the simulation results are to alternate estimates of consumers' price responsiveness. In addition, we re-estimated cigarette demand elasticities using pooled 2017–2024 SUSENAS data to capture more recent household behavior and test whether cigarette demand responsiveness has changed over time. SUSENAS is the most recent nationally representative source of household cigarette consumption data. In the previous CISDI IO study, we set the kretek own-price elasticity at the midpoint between the SUSENAS-based estimate and an earlier World Bank estimate because of challenges with the survey data. These challenges remain relevant: SUSENAS records cigarette quantities and expenditures, from which unit values are derived as price proxies, but it does not provide sufficiently detailed information on prices and expenditures by cigarette type and excise tier, which constrains the estimation of product-specific behavioral responses. Although these updated estimates provide a useful robustness check, they imply substantially higher price elasticities of demand than the broader tobacco economics literature typically reports, where cigarette demand is generally found to be price inelastic.[25] Given this divergence from the empirical literature, we do not adopt these updated estimates in the primary analysis. Instead, the main simulations continue to rely on the elasticity estimates from the previous CISDI's macroeconomic study. The elasticity sensitivity analysis is presented in Appendix 2.

4.3 Estimating additional government revenue

After estimating changes in cigarette demand, we calculate the additional tax revenue generated under each cigarette excise tax reform scenario. The additional revenue reflects the combined effect of changes in the excise tariff and changes in cigarette consumption following the tax reform. Because the simulation explicitly accounts for reduced cigarette consumption following higher cigarette prices, the estimated increase in government revenue reflects both the higher tax collected per cigarette stick and the lower number of cigarette sticks consumed.

The additional tax revenue is estimated by comparing excise revenue under each reform scenario with that under the baseline scenario, as presented in Equation (5):

$$\Delta TR = \sum_i \left(\tau_i^{new} Q_i^{after} - \tau_i^0 Q_i^0 \right) \qquad (5)$$

where ΔTR denotes the additional government excise revenue, τ_i^{new} represents the excise tax per stick for cigarette type i under the reform scenario, τ_i^0 represents the baseline excise tax per stick, Q_i^{after} denotes cigarette consumption after the tax reform, and Q_i^0 denotes baseline cigarette consumption.

We calculate this separately for each cigarette category (SKM, SKT, and SPM), using post-reform cigarette consumption from the demand estimation described in the previous subsection. The additional excise revenue is then aggregated across all cigarette categories to obtain the total change in government excise revenue under each tax reform scenario.

4.4 Input Output (IO) analysis

The Input-Output (IO) analysis is a macroeconomic framework that models the interdependence among industries within an economy. In the IO framework, one sector's output serves as an intermediate input for other sectors while also contributing to final demand from households, government, investment, and exports. Unlike regression-based approaches, which primarily estimate empirical relationships from observed data, the IO framework simulates the economy-wide consequences of alternative policy scenarios by tracing how changes in final demand propagate through intersectoral linkages. Consequently, changes in one sector's final demand generate ripple effects throughout the economy as production adjusts across interconnected sectors.

In this study, the estimated changes in cigarette consumption and the additional government excise revenue generated under each reform scenario constitute the economic shocks introduced into the IO model, allowing the resulting impacts on economic output, aggregate income, and employment to be estimated. Table 5 summarizes the key terminology used throughout the IO analysis.

Table 5. Input Output terminology

Term	Definition
IO table	A table that summarizes sectors' interdependence in the economy, showing the value of total goods and services produced (outputs) by one sector that other sectors use as inputs.
Technical coefficients	The number of inputs required to produce one unit of output.
Final demand	The use of outputs for consumption, investment, government consumption, and export.
Initial effect	The effect of a change in a sector's final demand on that sector's output, income, and employment.
Direct effect	The effect of a change in a sector's final demand on the output, income, and employment of the supplier sectors.
Indirect effect	The effect of a change in a sector's final demand on the output, income, and employment of the sectors that supply inputs to the suppliers.
Simple multiplier (Type I)	The effect of a change in a sector's final demand on total output, income, and employment in the economy. Type I multiplier = Initial effect + Direct effect + Indirect effect.
Consumption-induced effect	The effect of a change in a sector's final demand resulting from changes in household income and consumption.
Total multiplier (Type II)	The effect of a change in a sector's final demand on total output, aggregate income, and employment in the economy. Type II multiplier = Type I multiplier + Consumption-induced effect.

Source: Authors' compilation

4.5 Estimating the macroeconomic impacts

To estimate the macroeconomic impacts of cigarette excise tax reform, this study conducts a series of simulations representing three economic transmission channels through which the reform affects the economy: (1) reduced cigarette consumption, (2) household expenditure reallocation, and (3) government expenditure financed by the additional cigarette tax revenue. We obtain the overall macroeconomic impacts by combining the effects of these transmission channels under each tax reform scenario. Table 6 summarizes the macroeconomic simulations conducted in this study.

Table 6. Macroeconomic simulations

Simulation	Economic transmission channel	Description
Simulation A	Reduced cigarette consumption	Estimates the impact of reduced cigarette consumption following the cigarette excise tax reform.
Simulation B	Household expenditure reallocation	Estimates the effects of household non-cigarette expenditure adjustment, specifically by crowding out spending on non-cigarette commodities according to the baseline household consumption structure. Government revenue allocation effects are not considered
Simulation C to E	*Additional government revenue reallocation*	*Simulations C to E estimate the impact of government expenditure of cigarette tax revenue under different spending scenarios. Note that these simulations do not include the effects estimated in simulations A and B.*
Simulation C	Reallocation to business-as-usual expenditure	• After mandatory allocations for DBH CHT* and PRD**, the remaining discretionary excise revenue is allocated proportionally according to the baseline government expenditure structure in the Input-Output table. • Additional VAT revenue continues to follow the business-as-usual expenditure pattern.

Simulation	Economic transmission channel	Description
Simulation D	D.I Reallocation to health sector and promotions expenditure	• Following the mandatory allocations for DBH CHT* and PRD**, the remaining discretionary excise revenue is allocated to health-related sectors, including public and private health services, pharmaceutical products, and medical equipment, and tobacco control campaigns via Information and communication technologies (ICT) • Additional VAT revenue continues to follow the business-as-usual expenditure pattern.
	D.II Reallocation to health financing and service delivery	• Following the mandatory allocations for DBH CHT* and PRD**, the remaining discretionary excise revenue is allocated to the same health-related sectors as in D.I, but more heavily concentrated on health financing and direct health service delivery, primarily through a larger share to JKN and public health services, while reducing allocations to pharmaceutical products, medical equipment industries, and tobacco control campaigns. • Additional VAT revenue continues to follow the business-as-usual expenditure pattern.
Simulation E	Reallocation to social protection programs	• After mandatory allocations for DBH CHT* and PRD**, the remaining discretionary excise revenue is allocated to social protection programmes and related sectors, including food assistance, education, and basic health services. • Additional VAT revenue continues to follow the business-as-usual expenditure pattern.
Overall impact	Net-macroeconomic impact	Estimated by combining the effects of Simulations A and B with one of the government expenditure scenarios (Simulation C, D.I, D.II, or E).

Simulation	Economic transmission channel	Description

Notes:
* The Revenue Sharing Fund for Tobacco Excise (DBH CHT) is equivalent to 3 percent of domestic cigarette excise revenue. Under current regulations, 50 percent of DBH CHT is allocated for community welfare, 10 percent for law enforcement, and 40 percent for health programmes.
** The provincial cigarette tax (PRD) is levied at 10 percent of cigarette excise revenue. Of provincial cigarette tax revenues, 37.5 percent supports the National Health Insurance (JKN), at least 7.5 percent to other health services, and up to 5 percent to law enforcement.

Simulation A captures the immediate reduction in cigarette consumption before households reallocate the savings generated from lower cigarette expenditure. Simulation B estimates the effects of households adjusting their spending. In our analysis, household income is assumed to remain constant, so an increase in cigarette spending crowds out or reduces spending on non-cigarette commodities. We distribute the resulting adjustment in non-cigarette spending across commodities in proportion to the baseline household consumption structure in the IO table. The combined effects of Simulations A and B therefore represent the net impact of changes in household spending following cigarette excise tax reform.

Simulations C, D.I, D.II, and E evaluate government expenditure effects. Across all government expenditure scenarios, additional government revenue is first allocated according to the existing statutory earmarking arrangements for cigarette taxation before applying any alternative spending assumptions. This includes the mandatory allocation of 3 percent of the additional cigarette excise revenue to the Revenue Sharing Fund for Tobacco Excise (*Dana Bagi Hasil Cukai Hasil Tembakau, DBH CHT*), as regulated under Ministry of Finance Regulation No. 72 of 2024. Under this regulation, DBH CHT is allocated 50 percent for community welfare, 10 percent for law enforcement, and 40 percent for health programmes.[25]

It also includes provincial cigarette tax (*Pajak Rokok Daerah*, PRD), levied at 10 percent of cigarette excise revenue as stipulated under Article 36 of Law No. 1 of 2022 (UU HKPD) and further regulated under PMK No. 143 of 2023 on the procedures for the collection, withholding, and remittance of the cigarette tax. Of the PRD revenue, 2.5 percent is retained by the central government for customs and excise law enforcement. In comparison, the remaining 97.5 percent is transferred to provincial governments, of which 37.5 percent supports the National Health Insurance (JKN), at least 7.5 percent goes to other health services, and up to five percent goes to law enforcement at the regional level.[26]

Because the regulations do not explicitly translate these provisions into the corresponding IO sectors, the proposed activities are matched to the most relevant IO sectors. Additional VAT revenue is assumed to continue following the baseline government expenditure pattern represented in the Input-Output table (business-as-usual). After these mandatory allocations are satisfied, the remaining discretionary excise revenue is allocated according to the assumptions specified under each government expenditure scenario.

5
RESULT

5.1 Intersectoral linkage between cigarette and other sectors

This section describes the economic linkages between the cigarette sector and the rest of the Indonesian economy based on the Input-Output (IO) analysis. It begins by describing the cigarette sector's input structure, followed by the output, income, and employment multipliers, as well as the sectors most affected by changes in cigarette demand.

5.1.1 IO structure of the cigarette sector

The cigarette sector generated Rp272.56 trillion output in 2025. Table 7a presents its input structure. To produce one unit of output, the sector requires 0.353 units (35.3%) of intermediate domestic inputs and 0.057 units (5.7%) of imported inputs, while the remaining 0.590 units (59.0%) represent value added. On the output side, almost all cigarette production goes to final demand—primarily household consumption—with only a negligible share used as intermediate inputs by other industries (Table 7b). Consequently, the cigarette sector has very limited forward linkages within the economy, meaning changes in cigarette production generate little additional output in downstream industries.

Table 7a. IO structure of the cigarette sector (input)

	Value (Rp trillion)	Percent of total input (%)
Intermediate inputs		35.3%
Agriculture	40.77	
Industry	28.70	
Services	26.85	
Import (imported intermediate inputs)	15.52	5.7%
Value added (wages, surplus, other net taxes on production)	160.72	59.0%
Total value of output	272.56	100%

Source: Authors' calculations based on the IO analysis.

Table 7b. IO structure of the cigarette sector (output)

	Value (Rp trillion)	Percent of total output (%)
Intermediate demand (sold to other industries)	5.63	2.1
Household consumption	249.03	91.4
Change in inventories	3.67	1.3
Exports of goods	13.74	5.0
Exports of services	0.49	0.2
Total value of output	272.56	100%

Source: Authors' calculations based on the IO analysis.

5.1.2 Output multiplier

AAn output multiplier measures the total change in economy-wide output generated by a one-unit change in a particular sector's final demand. The Type-I output multiplier has three components: initial, direct, and indirect effects. The initial effect equals one, reflecting the direct change in the sector's own output resulting from a one-unit change in final demand. The direct effect captures the additional output required from industries supplying intermediate inputs to the sector. In contrast, the indirect effect reflects the subsequent rounds of production generated as those supplying industries purchase inputs from their own suppliers.

Table 8 shows that the cigarette sector's direct effect is 0.35, indicating that producing an additional Rp1.00 trillion of cigarette output requires about Rp353 billion in intermediate inputs from upstream sectors. Conversely, a Rp1.00 trillion reduction in cigarette output would reduce demand for intermediate inputs by the same amount. The indirect effect is estimated at 0.17, reflecting the additional production generated along the upstream supply chain. Combined, these effects produce a Type-I output multiplier of 1.53, implying that every Rp1.00 increase (decrease) in final demand for cigarette products generates a Rp1.53 increase (decrease) in total economic output.

The Type-II output multiplier extends the Type-I multiplier by incorporating induced consumption effects, which arise when changes in household income alter household consumption and generate additional rounds of economic activity. For the cigarette sector, the Type-II output multiplier is 2.20, indicating that every additional Rp1.00 of final demand for cigarette products requires Rp2.20 of total output across the economy. Conversely, a Rp100 trillion reduction (increase) in final demand for cigarette products would reduce (increase) total economic output by approximately Rp220 trillion.

Table 8. Output multiplier of the cigarette sector

Type of multiplier	Value
Initial effect	1.00
Direct effect	0.35
Indirect effect	0.17
Type-I multiplier	1.53
Consumption-induced effect	0.67
Type-II multiplier	2.20

Source: Authors' calculations based on the IO table.

Table 9 presents the five sectors most affected by changes in cigarette output. Beyond the cigarette sector itself, which accounts for 46.9 percent of the total Type-II output multiplier, the agriculture sector (seasonal and annual estate crops) is among the sectors most affected because it supplies a substantial share of the intermediate inputs used in cigarette production. Other sectors that experience relatively large spillover effects include the food and beverage industry, wholesale and retail trade, and information and communication. These sectors are affected either through their direct supply linkages with the cigarette sector or through the broader production and consumption linkages captured by the Type-II multiplier.

Table 9. Top five sectors affected by changes in the final demand of the cigarette sector based on Type-II output multiplier

Sectors	Contribution to the multiplier (%)
Cigarette sector	46.9%
Seasonal and annual estate crops	9.4%
Food and beverage industry	6.2%
Wholesale and retail trade	5.1%
Information and communication	2.9%

Source: Authors' calculations based on the IO table.

5.1.3 Income multiplier

An income multiplier measures the total change in household income generated by a one-unit change in a particular sector's output. Table 10 presents the income multiplier for Indonesia's cigarette sector. A Rp1.00 trillion reduction in cigarette output directly reduces household income in the cigarette sector by Rp153 billion (initial effect). The decline also lowers income in upstream

supplying industries by Rp78 billion (direct effect), while subsequent rounds reduce income in further upstream sectors by an additional Rp36 billion (indirect effect). After accounting for induced consumption effects, the Type-II income multiplier is estimated at 0.40, indicating that every Rp1.00 trillion decrease (increase) in cigarette output reduces (increases) aggregate household income by approximately Rp400 billion.

Table 10. Income multiplier of the cigarette sector

Type of multiplier	Value
Initial effect	0.15
Direct effect	0.08
Indirect effect	0.04
Type-I multiplier	0.27
Consumption-induced effect	0.13
Type-II multiplier	0.40

Source: Authors' calculations based on the IO table.

Table 11 identifies the sectors where changes in household income are most concentrated following a change in cigarette output. Beyond the cigarette sector itself, which experiences the largest income effect, estate-crop agriculture is the most affected sector due to its strong upstream linkage with cigarette manufacturing. Other sectors with relatively large income effects include wholesale and retail trade, financial intermediation services, and information and communication.

Table 11. Top five sectors affected by changes in the final demand of the cigarette sector based on Type-II income multiplier

Sectors	Contribution to the multiplier (%)
Cigarette sector (own effect)	39.6%
Seasonal and annual estate crops	14.5%
Wholesale and retail trade	8.4%
Financial intermediation services	2.9%
Information and communication	2.8%

Source: Authors' calculations based on the IO table.

5.1.4 Employment multiplier

An employment multiplier measures the number of jobs created or lost in the economy following a one-unit change in a particular sector's output. Unlike the output and income multipliers, Table 12 presents employment multipliers separately for SKM, SKT, and SPM because the three cigarette subsectors differ substantially in their labor intensity. The multipliers are expressed as the number of jobs associated with every Rp1 billion of output. For every Rp1 billion of cigarette output, the Type-II employment multiplier is estimated at 10 jobs for SKT, compared with eight jobs for SPM and six jobs for SKM, reflecting the substantially greater labor intensity of hand-rolled cigarette production.

Table 12. Employment multipliers by cigarette type (persons per Rp 10 billion of output)

Type of multiplier	SKM	SKT	SPM
Initial effect	2	39	21
Direct effect*	25	25	25
Indirect effect*	8	8	8
Type-I multiplier	35	72	54
Consumption-induced effect*	26	26	26
Type-II multiplier	61	98	80

Source: Authors' calculations based on the IO table.

Note: *The direct, indirect, and consumption-induced effects are assumed to be identical across SKM, SKT, and SPM because subsector-specific Input-Output data are unavailable. Accordingly, the three cigarette subsectors are assumed to share the same intermediate input structure and draw on the same suppliers in the same proportions

Table 13 presents the sectoral composition of the Type-II employment multiplier for each cigarette subsector. Seasonal and annual estate crops, food-crop agriculture, wholesale and retail trade, and the tobacco processing industry consistently appear among the largest contributors across all three cigarette subsectors, reflecting their important roles in the cigarette supply chain. The cigarette industry's employment effect accounts for 40.7 percent of SKT's total employment multiplier, compared with 27.5 percent for SPM and only 4.8 percent for SKM. Among the machine-made products, the difference between SPM and SKM reflects their direct labor requirements. SKM accounts for about 53 percent of cigarette-sector output (Figure 2) but only about six percent of its employment, implying a direct requirement of about two jobs per Rp10 billion of output. In contrast, SPM accounts for about three percent of both output and employment, implying about 21 jobs per Rp10 billion. SKM's direct employment effect is, therefore, very small, which could potentially be due to a high efficiency of the large scale production, and most of its employment multiplier arises in supplying sectors.

This pattern is consistent with the substantially more labor-intensive production process of hand-rolled kretek cigarettes relative to the more mechanized production of machine-made cigarettes. However, interpret the sectoral decomposition with caution, as it assumes SKM, SKT, and SPM share a common production structure because subsector-specific Input-Output data are unavailable.

Table 13. Sectoral composition of the Type-II employment multiplier for the cigarette subsectors

Sectors	Contribution to the multiplier		
	SKM	SKT	SPM
Cigarette industry (own effect)	4.8%	40.7%	27.5%
Seasonal and annual estate crops	30.5%	19.0%	23.2%
Food-crop agriculture	11.5%	7.2%	8.8%
Wholesale and retail trade	11.3%	7.0%	8.6%
Tobacco processing industry	11.2%	7.0%	8.5%
Food and beverage services	5.1%	3.2%	3.9%
Other sectors	25.5%	15.9%	19.5%

Source: Authors' calculations based on the IO table.

5.2 Macroeconomic impacts of cigarette excise tax reform

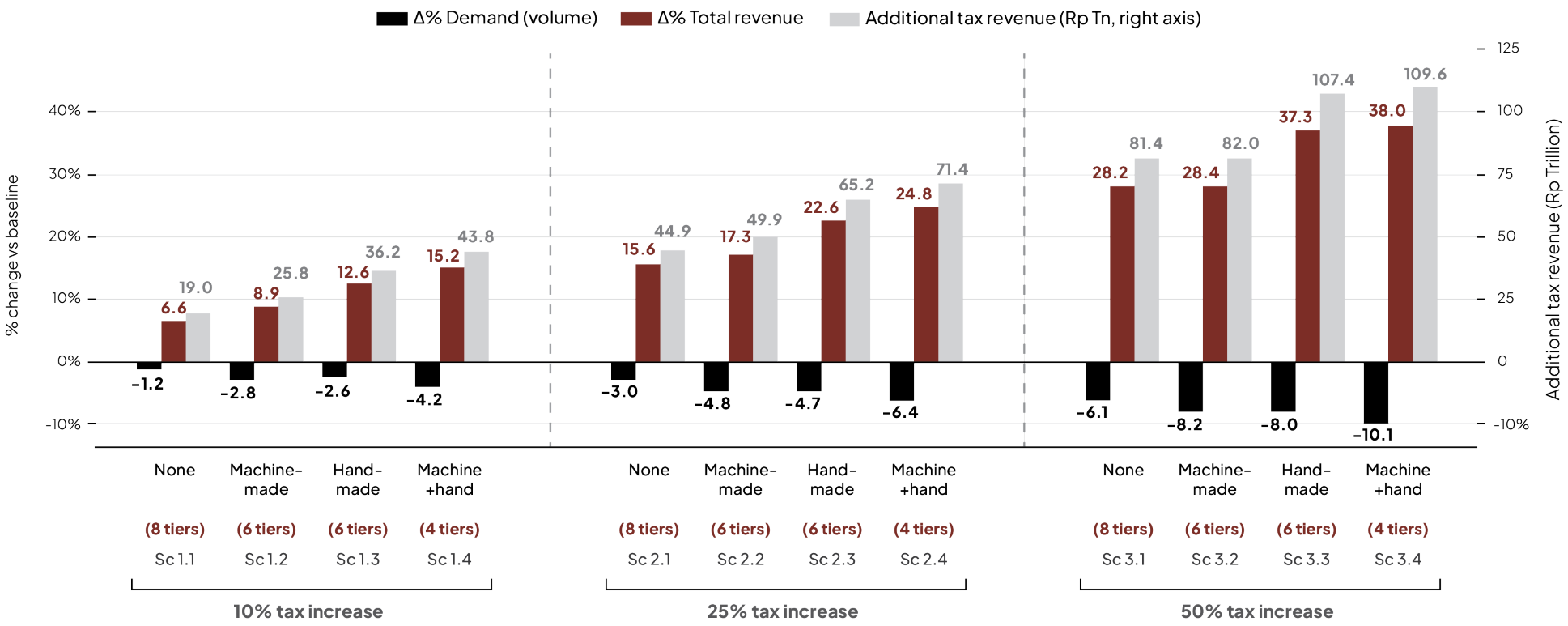
This section presents the results of the Input-Output (IO) analysis of the macroeconomic impacts of cigarette excise tax reform on economic output, aggregate income, and employment. The estimates use the Type-II multipliers described in the previous section, which capture both production-induced and consumption-induced effects throughout the economy.

5.2.1 The impact on consumption and tax revenue across scenarios

Figure 5 presents the estimated effects of cigarette excise tax reform across the twelve policy scenarios. Higher cigarette excise tax rates reduce cigarette consumption while generating additional government tax revenue. These effects grow as excise tax rates rise and the cigarette excise tier structure is further simplified.

Greater tier simplification, particularly for hand-rolled cigarettes (SKT), or through the simultaneous simplification of both hand-rolled and machine-made cigarette tiers, consistently produces the largest reductions in cigarette consumption and the highest additional tax revenue across all excise tax increase scenarios. The greatest impact is observed under Scenario 3.4, which combines a 50 percent excise tax increase with the simplification of both hand-rolled (SKT) and machine-made cigarette tiers, resulting in a 10.1 percent reduction in cigarette consumption and Rp109.6 trillion in additional tax revenue.

Figure 5. Additional tax revenue and change in cigarette demand across scenarios



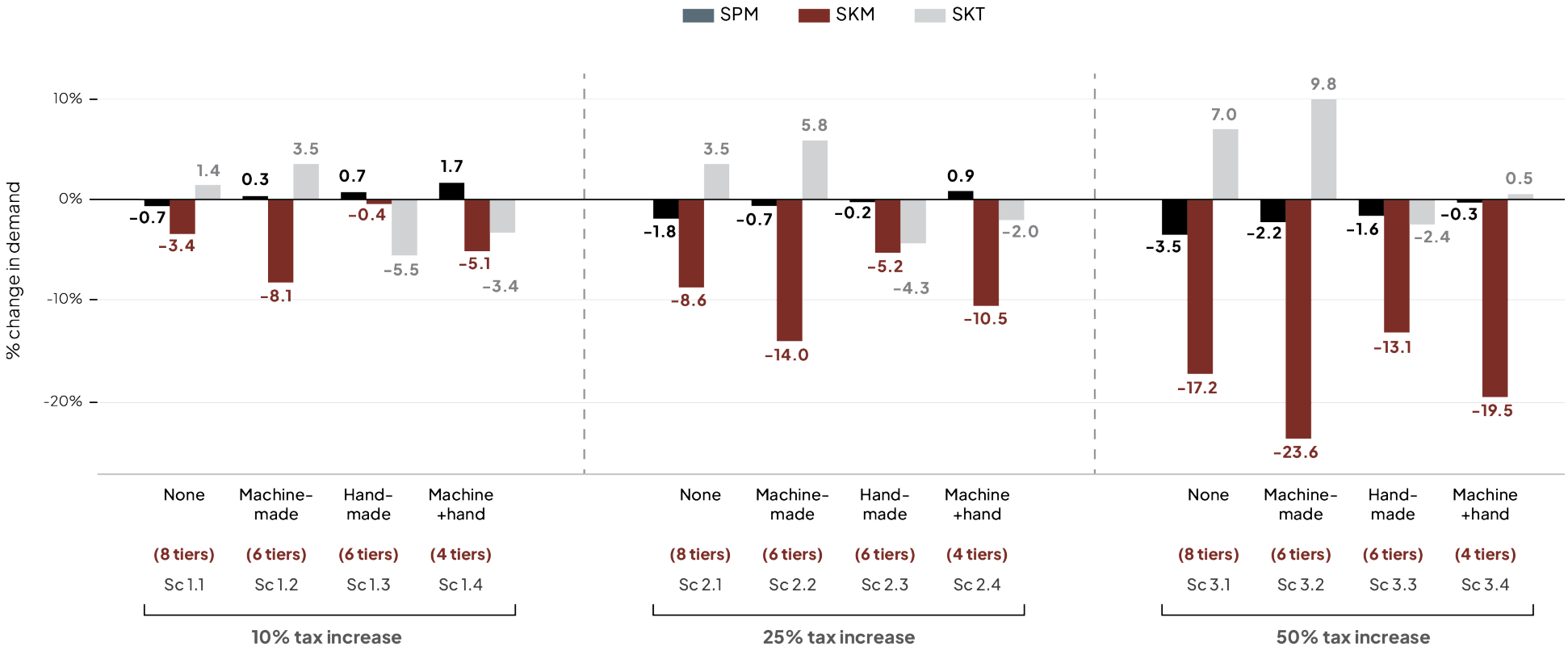
Tier simplification refers to merging excise tiers for machine-made (SKM/SPM) and/or hand-made (SKT) products; The numbers in dark red on the X-axis labels refer to the number of tiers remaining after simplification.

Source: Authors' calculations based on the IO table

Disaggregating changes in cigarette consumption by product type shows that SKM sees the largest reduction across all reform scenarios, reaching about 19.5 percent under Scenario 3.4 (Figure 6). This largely reflects SKM's dominant share of the cigarette market.

Although total cigarette consumption declines under all reform scenarios, the distribution of these reductions varies with the excise reform design. When excise increases concentrate on machine-made cigarettes—for example, under the machine-made tier simplification scenarios (Scenarios 1.2, 2.2, and 3.2)—some consumers switch from SKM to the relatively cheaper hand-rolled kretek (SKT) products. However, scenarios that simplify both machine-made and hand-rolled cigarette tiers (Scenarios 1.4, 2.4, and 3.4), which also substantially raise SKT prices, reduce this substitution by narrowing price differentials across cigarette products. Consequently, simplifying SKM/SPM and SKT tiers simultaneously yields larger reductions in overall cigarette consumption than reforms targeting only one segment of the cigarette market.

Figure 6. Change in demand by cigarette type across scenarios



Source: Authors' calculations based on the IO table

5.2.2 Net macroeconomic impacts across scenarios

Figure 7 presents the estimated net macroeconomic impacts across the twelve cigarette excise tax reform scenarios under four alternative government revenue-use schemes. Across all simulated scenarios, cigarette excise tax reform generates positive net impacts on economic output, aggregate income, and employment. These impacts generally increase with the size of the excise tax increase and the extent of excise tier simplification. This indicates that more comprehensive reforms, combining larger excise tax increases with greater simplification of the excise structure, can generate larger economy-wide gains.

Among the simulated scenarios, the most comprehensive reform, combining a 50–percent increase in cigarette excise tax rates with simultaneous simplification of both hand-rolled kretek (SKT) and machine-made cigarette (SKM/SPM) tiers under the business-as-usual government revenue allocation, generates the largest net macroeconomic gains. Under this reform, total economic output is estimated to increase by Rp315.1 trillion, aggregate income by Rp81.7 trillion, and employment by approximately 1.14 million net additional jobs.

Figure 7. Cigarette excise tax reform impacts: output, income, and employment

Tariff Design	Allocation Scheme	GROUP 1 — TAX +10%			GROUP 2 — TAX +25%			GROUP 3 — TAX +50%		
		Net Output (Rp Trillion)	Net Income (Rp Trillion)	Net Employ-ment ('000 persons)	Net Output (Rp Trillion)	Net Income (Rp Trillion)	Net Employ-ment ('000 persons)	Net Output (Rp Tn)	Net Income (Rp Trillion)	Net Employ-ment ('000 persons)
7 → 4 tiers (b1,177oth hand and machine simplification)	C	126.59	32.84	446	206.41	53.26	731	315.09	81.68	1,145
	D.II	122.74	29.70	402	199.16	48.16	661	305.49	73.87	1,037
	3	116.75	26.87	459	189.44	43.58	752	290.59	66.83	1,117
	D.I	118.11	27.34	370	191.66	44.33	608	293.99	67.99	956
8 → 6 tiers (hand-made simplification)	C	104.36	27.07	360	187.46	48.59	655	308.15	79.85	1,095
	D.II	101.18	24.48	324	181.75	43.94	590	298.77	72.21	989
	E	96.24	22.15	371	172.88	39.75	674	284.19	65.33	1,126
	D.I	97.37	22.53	298	174.90	40.44	542	287.51	66.47	910
8 → 6 tiers (machine made simplification)	C	73.91	19.15	267	142.95	37.03	522	234.92	60.86	880
	D.II	71.66	17.32	242	138.59	33.48	473	227.77	55.04	799
	E	68.16	15.67	275	131.83	30.29	536	216.65	49.79	904
	D.I	68.96	15.94	223	133.37	30.82	436	219.19	50.66	739
No simplification	C	54.09	14.00	190	128.10	33.16	456	232.46	60.19	845
	D.II	52.44	12.66	172	124.19	29.99	412	225.38	54.43	765
	E	59.88	11.45	196	118.13	27.12	469	214.38	49.23	869
	D.I	50.46	11.65	158	119.52	27.60	379	216.89	50.09	706

Net macroeconomic gains



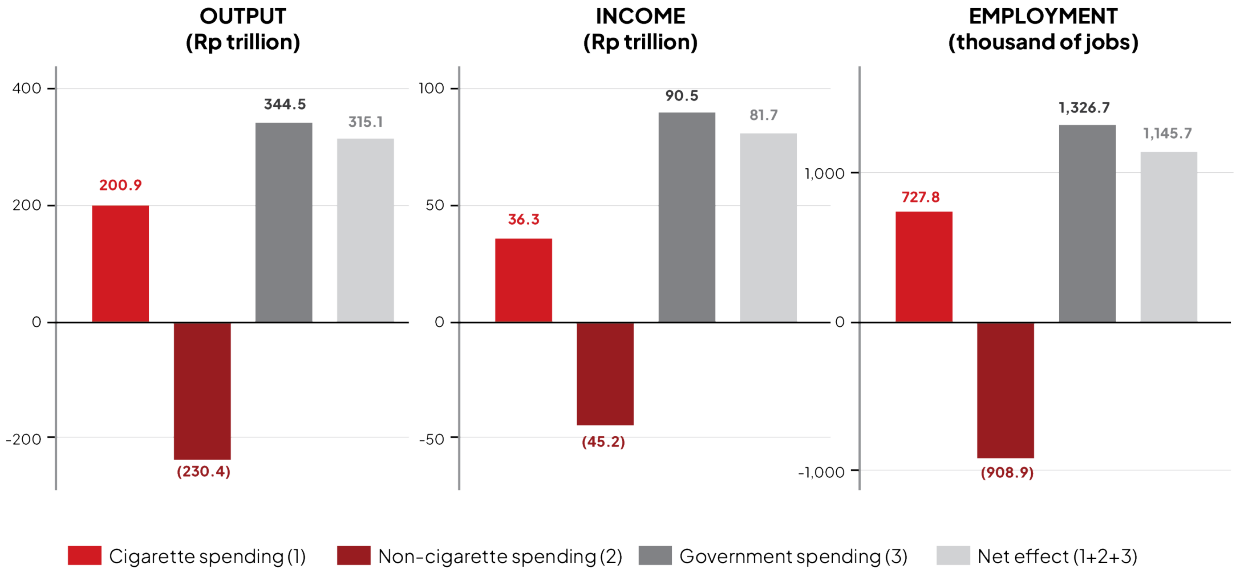
Scenario with the highest macroeconomic impact: 8 → 4 tiers-C: +50% tax, full simplification, Business as usual allocation

5.2.3 Impacts under the highest net economic gain scenario

Under the most comprehensive reform scenario, the economy-wide impacts are transmitted through three channels. First, higher cigarette prices increase household spending on cigarettes despite lower consumption volumes, as those who continue to smoke pay more for each cigarette. Second, households reallocate spending from non-cigarette goods and services to cover higher cigarette costs, partially offsetting the resulting economic expansion. Third, under the business-as-usual allocation scheme, the government recycles additional revenue from the reform through public expenditure, generating further economic activity. Overall, the expansionary effect of government spending financed by additional cigarette tax revenue drives the positive macroeconomic impact and more than offsets the contraction in non-cigarette household spending.

The decomposition of simulation results illustrates the contribution of each channel (Figure 8). The increase in cigarette spending (Simulation A) raises economic output by Rp200.9 trillion, while the reallocation away from non-cigarette spending (Simulation B) reduces output by Rp230.4 trillion. Government expenditure financed by additional cigarette tax revenue (Simulation C) contributes a further Rp344.5 trillion. Together, these effects increase economic output by Rp315.1 trillion, aggregate income by Rp81.7 trillion, and create approximately 1.14 million jobs.

Figure 8. Decomposition of net impact



Source: Authors' calculations

5.2.4 Comparison with the 2021 macroeconomic impact study

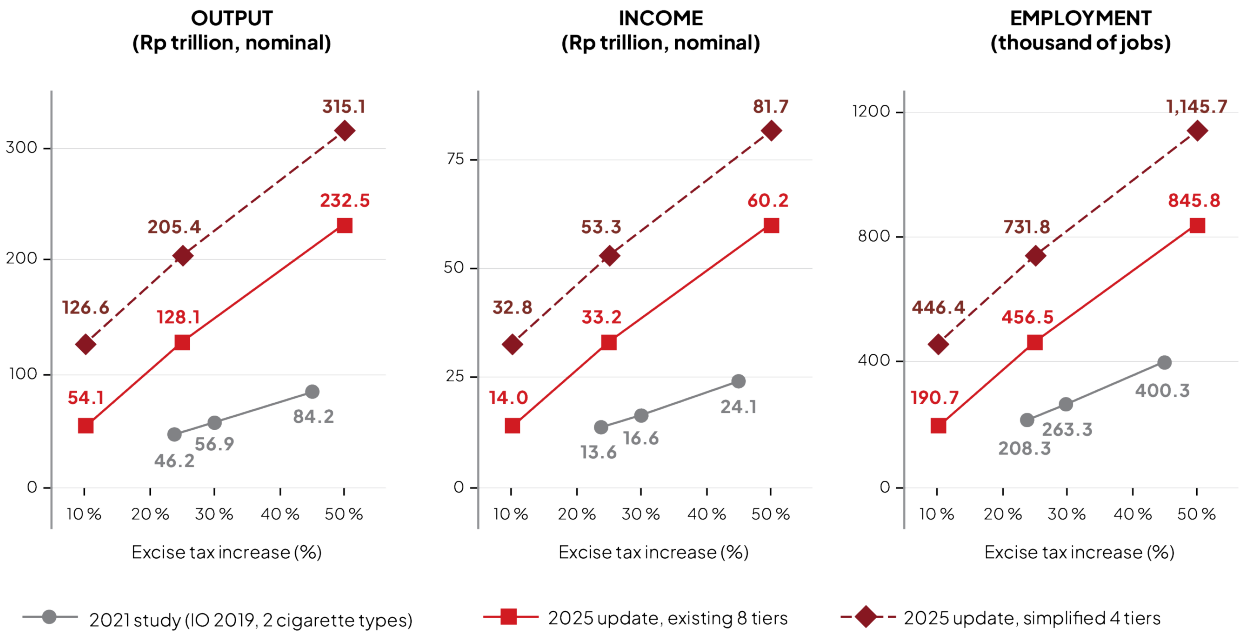
Figure 9 compares the net macroeconomic impacts estimated in this study with those of our 2021 input-output study.[7] Both studies report the net impact under the business-as-usual allocation of additional revenue, expressed in nominal terms. However, the reform scenarios differ. The 2021 study simulated the 2020 tax increase (23.8 percent for kretek and 27.2 percent for white cigarettes) and 30- and 45-percent tax increases, without changing the tier structure. This study simulates tax

increases of 10, 25, and 50 percent, distinguishes three cigarette types (SKM, SKT, and SPM), and also evaluates excise tier simplification, as shown in Figure 9 for both the existing eight-tier structure and the simplified four-tier structure.

Because the tax increases are not identical, the comparison focuses on the closest levels. Under the existing eight-tier structure, a 25-percent increase would increase output by Rp128.1 trillion, aggregate income by Rp33.2 trillion, and employment by 456,5 thousand jobs, compared to Rp56.9 trillion, Rp16.6 trillion, and 263.3 thousand jobs, respectively for a 30-percent increase in the 2021 study. A 50 percent increase would increase output by Rp232.5 trillion, aggregate income by Rp60.2 trillion, and employment by 845.8 thousand jobs, compared to Rp84.2 trillion, Rp24.1 trillion, and 400.3 thousand jobs for a 45-percent increase in the 2021 study. Combining the 50-percent increase with tier simplification raises these gains further, to Rp315.1 trillion, Rp81.7 trillion, and 1.15 million jobs, respectively.

However, interpret these magnitudes with caution. The 2021 study used the 2010 IO table updated to 2019 and demand elasticities for only two cigarette types. In contrast, this study uses the 2020 IO table updated to 2025, and nominal values partly reflect price changes and economic growth between 2019 and 2025. Despite these differences, both studies reach the same conclusion. In this case, **higher cigarette excise taxes generate positive net macroeconomic impacts that increase with the size of the tax increase**, driven mainly by government spending of the additional revenue. In contrast, the effects of lower cigarette consumption and household reallocation largely offset each other (Figure 8). This update further shows that simplifying the tier structure raises these gains.

Figure 9. Net macroeconomic impacts in the 2021 study and the 2025 update (nominal terms)



Source: Authors' calculations; 2021 study estimates from Bella et al. (2024), Table 7 (Simulation A, business-as-usual allocation).
Note: The 2021 estimate plotted at 23.8% corresponds to the 2020-level tax increase scenario (23.8% for kretek and 27.2% for white cigarettes). The 2025 series correspond to Scenarios 1.1, 2.1, and 3.1 (existing eight tiers) and Scenarios 1.4, 2.4, and 3.4 (four tiers) under Simulation C.

5.2.5 Labor transition potential from the tobacco sector

Under the highest net economic gain scenario, no sector—including tobacco-related sectors—is estimated to experience a net employment loss. This reflects the model's short-run structure: because cigarette demand is relatively inelastic, higher prices more than offset lower consumption volumes, sustaining nominal cigarette expenditure and labor demand in tobacco-related sectors immediately after the reform. The employment gains therefore reflect broad-based economic expansion rather than a reallocation of workers away from tobacco.

This result does not imply that tobacco-sector employment will remain secure over the longer term. Sustained excise increases and declining smoking prevalence are likely to reduce tobacco-sector output and employment over time, although the static Input-Output framework cannot capture these dynamic effects. A gradual transition of workers into expanding sectors (i.e., non-tobacco industry) is a realistic longer-term prospect. Preparing for this transition while aggregate employment continues to expand would allow workers to move progressively into new opportunities rather than face displacement after an abrupt sectoral contraction.

The sectors with the strongest employment gains indicate where this transition could occur. These can be broadly grouped into agriculture and primary activities, industry and manufacturing, and services and trade (Table 14).

Table 14. Potential destination sectors for labor transition from the tobacco sector

Target sector	Net job openings (person)	% Increase from baseline
Agriculture and primary		
Food crops agriculture	39,770	0.20
Livestock farming	4,824	0.10
Agricultural and hunting services	2,614	0.91
Seasonal and annual horticultural crops	675	0.03
Fishery	591	0.04
Industry and utilities		
Construction	9,746	0.10
Food and beverage industry	9,038	0.15
Paper industry and paper goods	8,059	1.03
Water procurement, waste management, waste and recycling	5,332	0.89
Chemical industry, pharmaceutical and traditional medicines	3,225	0.46

Target sector	Net job openings (person)	% Increase from baseline
Services and trade		
Wholesale and retail trade, not cars and motorcycles	45,087	0.19
Accommodation provision	20,462	1.08
Company services	18,508	0.72
Provision of food and beverages	14,889	0.15
Land transportation	9,838	0.37

Source: Authors' calculations

In agriculture and primary activities, most of the absorption is concentrated in food crops, livestock, seasonal and horticultural crops, fishery, and agricultural services, sectors that offer the closest skill fit for displaced estate-crop workers, whose competencies in soil management, crop tending, harvest handling, and rural supply chains carry over directly. Evidence from Indonesia's longitudinal Tobacco Farmers Survey (TFS) reinforces this picture: former tobacco farmers who stopped growing tobacco altogether fared better economically than those who remained, with higher incomes and more diversified livelihoods across enterprise, wage work, and other activities. Crucially, this transition does not require a wholesale reinvention of farming identity: nearly all former tobacco farmers (98.85%) participated in non-tobacco farming activities in the twelve months before the survey, and a higher share of land dedicated to tobacco farming is associated with lower household income, suggesting that displacement from tobacco is not only economically manageable but likely to leave affected farmers better off.[27]

In industry and manufacturing, openings are led by construction, food and beverage, and paper, followed by water and waste management and the chemical industry. These sectors closely match displaced factory workers, whose skills in machine operation, quality control, packaging, and production-line management transfer fairly directly. Survey evidence supports this fit: around 40 % of kretek factory workers had previously worked in these sectors, food production, farming, retail, and services, before entering the tobacco industry.[28]

6
DISCUSSION

This study demonstrates that cigarette excise tax reform in Indonesia can simultaneously reduce cigarette consumption, strengthen fiscal capacity, and generate positive net macroeconomic outcomes. Across all simulated reform scenarios, higher cigarette excise taxes consistently reduce cigarette consumption while increasing government tax revenue and generating net gains in economic output, aggregate income, and employment. These findings suggest that the economic consequences of cigarette excise reform cannot be evaluated solely based on the immediate decline in cigarette demand and its potential implications for tobacco sector output and employment. Instead, a comprehensive, economy-wide perspective is needed to capture the broader adjustments that follow the reform.

The analysis further shows that simplifying cigarette excise tiers substantially improves the effectiveness of tobacco taxation. For a given excise tax increase, scenarios with greater tier simplification consistently generate larger reductions in cigarette consumption, higher government revenue, and stronger macroeconomic gains. This reflects Indonesia's multi-tier cigarette excise system, where large tax differentials incentivize producers and consumers to substitute toward lower-tax cigarette categories within and across SKM, SKT, and SPM products. By reducing these price differentials, tier simplification enables excise tax increases to translate more effectively into higher retail prices, greater reductions in cigarette consumption, and higher tax revenue. These findings therefore provide additional economic support for resuming Indonesia's excise tier simplification agenda alongside future excise tax increases.

The study's positive macroeconomic outcomes are driven primarily by the reallocation of additional government revenue generated by higher cigarette excise taxes. The additional revenue is recycled into the economy through public expenditure, generating activity across non-cigarette sectors and offsetting the contractionary effects of reduced cigarette consumption and changes in household spending. As a result, the model estimates positive net impacts on output, aggregate household income, and employment across all simulated reform scenarios. These findings highlight the importance of accounting for how additional government revenue is used when evaluating the economy-wide consequences of tobacco taxation, rather than focusing only on the immediate effects on cigarette production and employment in tobacco-related industries.

The simulations also show that the macroeconomic outcomes of cigarette excise reform depend partly on how the government allocates additional cigarette tax revenue. Under the Input-Output framework, allocating the additional revenue according to the existing government expenditure structure generates the largest gains in economic output, aggregate income, and employment, as a greater share of expenditure flows to sectors with relatively high economic multipliers. This finding is consistent with our 2021 Input-Output study, which similarly found that maintaining the existing government expenditure structure could generate relatively strong short-run macroeconomic effects.[7] In contrast, allocating a larger proportion of revenue to health services or the National Health Insurance (JKN) produces slightly smaller short-run macroeconomic gains. However, this

does not mean the business-as-usual allocation is necessarily the preferred policy option, since health expenditure also generates important health and social benefits beyond those captured in the present analysis. Decisions on allocating additional cigarette tax revenue should consider both short-run macroeconomic impacts and broader public health objectives.

Several limitations of this study should be acknowledged. The Input-Output framework employed in this study is a static model that captures short-run demand-side adjustments but does not account for longer-term structural changes, technological progress, firm responses, or dynamic labor market adjustments. In the short run, because cigarette demand is relatively inelastic, the %age reduction in cigarette consumption may be smaller than the %age increase in cigarette prices, resulting in higher aggregate cigarette spending and tobacco-sector sales even as cigarette consumption declines. For the same reason, excise revenue would continue to rise even as consumption falls, providing a sustained source of financing for health and social programs. This revenue-generating potential may persist over the longer term, depending on the responsiveness of cigarette demand to sustained tax increases, and could provide additional fiscal resources to support health and social programs. Over the longer term, however, sustained tax increases and declining smoking prevalence may reduce tobacco-sector production and employment. At the same time, households may redirect expenditure toward other goods and services and affected workers may transition to other sectors.[6,29] The employment results in this study offer some indication of this transition potential, as several non-tobacco sectors gain employment under the reform scenario and could provide alternative opportunities as tobacco-sector activity declines. However, the study does not assess whether such transitions would occur in practice or whether tobacco-sector workers could successfully move into these sectors. Further research should therefore examine dynamic labor reallocation and worker transitions better to understand the longer-term employment effects of cigarette excise reform.

Second, because Statistics Indonesia (BPS) has not published subsector-specific Input-Output tables, the analysis cannot distinguish differences in the intermediate input structures of SKM, SKT, and SPM. Consequently, we assume all three cigarette subsectors share the same production structure, capturing heterogeneity only through observed production shares and labor intensity. As more detailed Input-Output statistics become available, future studies should incorporate subsector-specific production structures to improve the precision of sectoral impact estimates.

Finally, data limitations also constrain the estimation of key behavioral parameters, particularly cigarette demand elasticities. As discussed in Section 4.2, the available household survey data (SUSENAS) limit estimates of product-specific behavioral responses across SKM, SKT, and SPM. Future research could also examine e-cigarette use and potential substitution between conventional cigarettes and e-cigarettes, which would require more detailed data on e-cigarette consumption, prices, and consumer behaviour. Additional research would benefit from more granular survey data that distinguish cigarette expenditures and retail prices by product category and consumer characteristics. Such improvements would enable more robust estimates of price responsiveness and further strengthen future economic evaluations of cigarette excise reform.

7
CONCLUSION AND RECOMMENDATIONS

This study reinforces the view that cigarette excise taxation should be regarded not only as a public health intervention but also as an important fiscal and economic policy instrument. Across all scenarios assessed, cigarette excise reform is projected to reduce cigarette consumption while generating positive net impacts on economic output, aggregate household income, and employment. Importantly, these findings suggest that, under the model's assumptions, stronger tobacco taxation can achieve public health objectives without compromising overall macroeconomic performance. In addition, the analysis highlights the potential for labor reallocation following cigarette excise reform to support employment growth in expanding sectors.

These findings have several important policy implications. First, the government should consider substantial, sustained increases in cigarette excise taxes alongside continued simplification of the excise tier structure. To ensure that higher excise tariffs translate into higher consumer prices and strengthen the effectiveness of tobacco taxation, the government should also adjust the minimum retail price (HJE) accordingly, thereby limiting strategic downtrading by producers and consumers.

Among the scenarios assessed in this study, a 50 % increase in cigarette excise tax rates combined with simplifying the current eight-tier structure into four tiers generates the largest estimated net macroeconomic gains, while also producing substantial reductions in cigarette consumption and increases in government revenue. Second, recognizing the unsustainable nature of the tobacco industry, the government should implement targeted labor transition measures, including reskilling programmes, employment transition assistance, and local economic diversification strategies for tobacco-dependent communities to sustain the economic and employment gains demonstrated in this study. This scenario provides an important reference point for future cigarette excise tax policy reform in Indonesia.

References

1. Badan Kebijakan Pembangunan Kesehatan. Survei Kesehatan Indonesia (SKI) Dalam Angka. Jakarta: Kementerian Kesehatan RI; 2023.
2. Center for Indonesia's Strategic Development Initiatives. Satu Dekade Beban Ekonomi Merokok di Indonesia, 2019–2029: Estimasi dan Proyeksi Cost-of-Illness pada Perokok Aktif, Perokok Pasif, dan Mantan Perokok. Jakarta; 2026.
3. Center for Indonesia's Strategic Development Initiatives. Cigarette Affordability in Indonesia: Recent Trends and Elasticity. Jakarta: CISDI; 2026.
4. Bella A, Swarnata A, Vulovic V, Nugroho D, Meilissa Y, Usman U, et al. Macroeconomic impact of tobacco taxation in Indonesia. Tob Control. 2023 Feb 1;tc-2022–057735. doi:10.1136/tc-2022–057735
5. World Health Organization. WHO technical manual on tobacco tax policy and administration [Internet]. 2021. Available from: https://www.who.int/publications/b/56603
6. Sahadewo GA, Iglesias RM, Araujo EC, Nargis N, Harimurti P, Drope J, et al. The economics of tobacco taxation and employment in Indonesia : health population and nutrition global practice (English) [Internet]. WBG Global Tobacco Control Program Washington, D.C. : World Bank Group; 2017. Available from: http://documents.worldbank.org/curated/en/919961507699751298/health-population-and-nutrition-global-practice
7. Bella A, Swarnata A, Vulovic V, Nugroho D, Meilissa Y, Usman U, et al. Macroeconomic impact of tobacco taxation in Indonesia. Tob Control. 2024;33(Suppl 2):s108–14. doi:10.1136/tc-2022–057735
8. Zheng R. Cigarette Affordability in Indonesia : 2002 - 2017. World Bank Organization. 2018 May. doi:http://hdl.handle.net/10986/30027
9. Sarjana SP, Adrison V, University of Indonesia, Depok, Indonesia. The Impact of Multi-Tiered Specific Excise Tax Systems on the Creation of New Tobacco Brands in Indonesia: Public Health Implications. JTR. 2024;10(2):397–416. doi:10.15826/jtr.2024.10.2.175
10. Adrison V, Dauchy E. The impact of tax and price reforms on companies' prices in a complex cigarette tax system. Applied Economics. 2023 Dec 14;1–20. doi:10.1080/00036846.2023.2289905
11. Prasetyo BW, Adrison V. Cigarette prices in a complex cigarette tax system: empirical evidence from Indonesia. Tob Control. 2019 Jun 28;tobaccocontrol-2018–054872. doi:10.1136/tobaccocontrol-2018–054872
12. World Health Organization. WHO report on the global tobacco epidemic, 2025: warning about the dangers of tobacco. Geneva; 2025.
13. Chaloupka FJ, Straif K, Leon ME. Effectiveness of tax and price policies in tobacco control. Tob Control. 2011 May;20(3):235–8. doi:10.1136/tc.2010.039982
14. Chaloupka FJ, Yurekli A, Fong GT. Tobacco taxes as a tobacco control strategy. Tob Control. 2012 Mar;21(2):172–80. doi:10.1136/tobaccocontrol-2011–050417
15. Barber S et. al, Adioetomo SM, Ahsan A, Setyonaluri D. Tobacco Economics in Indonesia [Internet]. Paris: InterNational Union Against Tuberculosis and Lung Disease; 2008. 94 p. (International Union Against Tuberculosis and Lung Disease). Available from: http://www.worldlungfoundation.org/ht/a/GetDocumentAction/i/6567

16. Center for Indonesia's Strategic Development Initiatives. Impact of Cigarette Prices and Social Factors on Youth Smoking Initiation in Indonesia [Internet]. Jakarta; 2025. Available from: https://cisdi.org/en/research-and-publication/publication/impact-of-cigarette-prices-and-social-factors-on-youth-smoking-initiation-in-indonesia

17. Center for Indonesia's Strategic Development Initiatives. The impacts of cigarette prices on adult smoking cessation in Indonesia. Jakarta: CISDI; 2024.

18. Goodchild M, Perucic AM, Nargis N. Modelling the impact of raising tobacco taxes on public health and finance. Bull World Health Organ. 2016 Apr 1;94(4):250–7. doi:10.2471/BLT.15.164707 PubMed PMID: 27034518; PubMed Central PMCID: PMC4794304.

19. World Health Organization. The economic and health benefits of tobacco taxation [Internet]. 2015. Available from: https://www.who.int/publications/i/item/WHO-NMH-PND-15.6

20. Center for Indonesia's Strategic Development Initiatives. Raising and Simplifying the Cigarette Excise Tax in Indonesia: Simulated Revenue Gains and Public Health Benefits. Jakarta; 2026.

21. Bella A, Swarnata A, Nugroho D, Usman, Meilissa Y, Dartanto T. The Macroeconomic Impacts of Tobacco Taxation.

22. Ahsan A, Wiyono N. An Analysis of The Impact of Higher Cigarette Prices on Employment in Indonesia. Southeast Asia Tobacco Control Alliance (SEATCA); 2007.

23. Deaton A. The analysis of household surveys: A microeconometric approach to development policy [Internet]. The World Bank; 1997 [cited 2022 Oct 27]. Available from: http://elibrary.worldbank.org/doi/book/10.1596/0-8018-5254-4 doi:10.1596/0-8018-5254-4

24. John RM, Vulovic V, Chelwa G, Chaloupka FJ. Updated Toolkit on Using Household Expenditure Surveys for Research in the Economics of Tobacco Control. A Tobacconomics Toolkit. [Internet]. Chicago, IL: Tobacconomics, Institute for Health Research and Policy, University of Illinois Chicago; 2023. Available from: www.tobacconomics.org

25. Peraturan Menteri Keuangan Nomor 72 Tahun 2024 tentang Penggunaan Dana Bagi Hasil Cukai Hasil Tembakau [Internet]. Jakarta; 2024. Available from: https://peraturan.bpk.go.id/Details/306305/pmk-no-72-tahun-2024

26. Peraturan Menteri Keuangan Republik Indonesia Nomor 143 Tahun 2023 Tentang Tata Cara Pemungutan, Pemotongan, dan Penyetoran Pajak Rokok [Internet]. 2023. Available from: https://jdih.kemenkeu.go.id/api/download/c92ad6a3-2a53-4283-ad44-23ce0f4f0c8c/2023pmkeuangan143.pdf

27. Sahadewo GA, Drope J, Firman Witoelar, Li Q, Lencucha R. The Economics of Tobacco Farming in Indonesia: 4th Wave Tobacco Farmers Survey [Internet]. Economics for Health; 2026. Available from: http://economicsforhealth.org/files/research/1106/indonesia-tobacco-farming-study-wave4-report-final-.pdf

28. Nargis N, Sahadewo G, Araujo EC, Harimurti P, Drope J, Durazo J, et al. The economics of Kretek rolling in Indonesia [Internet]. World Bank; 2017. Available from: http://documents.worldbank.org/curated/en/644791507704057981

29. Cicowiez M, Cruces G, Falcone G, Puig J. On the impacts of higher tobacco taxes in Argentina: a computable general equilibrium approach. Tob Control. 2024 Jun 4;33(Suppl 2):s115–21. doi:10.1136/tc-2022-057725 PubMed PMID: 37041076; PubMed Central PMCID: PMC11187390.

Appendix 1. Summary of the IO tables (55 Sectors)

Table A1. Summary of the IO tables

Code	Sector	Type-II Multiplier			Share of output	Share of income	Share of employment	Share of household consumption	Share of government consumption
		Output	Income	Employment					
1	Food crops agriculture	2.21	0.57	0.036	1.50 %	2.46 %	13.26 %	0.58 %	0.00 %
2	Seasonal horticultural crops, annual horticultural crops, and other agriculture	2.05	0.46	0.009	0.92 %	1.18 %	1.54 %	2.36 %	0.00 %
3	Seasonal and annual estate crops	2.15	0.51	0.014	3.11 %	4.32 %	8.41 %	0.15 %	0.00 %
4	Livestock farming	2.57	0.60	0.015	1.33 %	1.99 %	3.40 %	1.14 %	0.00 %
5	Agricultural and hunting services	2.09	0.45	0.009	0.14 %	0.17 %	0.20 %	0.00 %	0.00 %
6	Forestry and logging	2.16	0.56	0.006	0.35 %	0.57 %	0.21 %	0.01 %	0.00 %
7	Fishery	2.09	0.51	0.007	1.64 %	2.47 %	1.14 %	3.72 %	0.00 %
8	Oil, gas and geothermal mining	1.99	0.31	0.003	1.76 %	1.13 %	0.12 %	0.00 %	0.00 %
9	Coal mining and lignite	2.15	0.32	0.004	3.21 %	1.72 %	0.25 %	0.00 %	0.00 %
10	Metal ore mining	1.96	0.33	0.004	1.33 %	0.96 %	0.40 %	0.00 %	0.00 %
11	Mining and other excavations	2.26	0.46	0.005	1.21 %	1.28 %	0.41 %	0.00 %	0.00 %
12	Coal industry and oil and gas refining	2.00	0.22	0.002	2.00 %	0.58 %	0.20 %	1.82 %	0.00 %
13	Food and beverage industry	2.58	0.42	0.012	10.84 %	4.16 %	4.00 %	18.39 %	0.34 %
1411	**Machine-made white cigarette industry (SPM)**	**2.20**	**0.40**	**0.008**	**0.02 %**	**0.01 %**	**0.01 %**	**0.06 %**	**0.00 %**
1412	**Machine-made kretek cigarette industry (SKM)**	**2.20**	**0.40**	**0.006**	**0.33 %**	**0.25 %**	**0.02 %**	**1.13 %**	**0.00 %**
1413	**Hand-rolled kretek cigarette industry (SKT)**	**2.20**	**0.40**	**0.010**	**0.27 %**	**0.21 %**	**0.32 %**	**0.95 %**	**0.00 %**
142	**Tobacco processing industry**	**2.34**	**0.39**	**0.021**	**0.04 %**	**0.02 %**	**0.17 %**	**0.00 %**	**0.00 %**
15	Textile and apparel industry	2.73	0.43	0.013	1.65 %	1.04 %	2.89 %	1.70 %	0.00 %
16	Leather industry, leather goods and footwear	2.77	0.62	0.014	0.27 %	0.37 %	0.53 %	0.22 %	0.00 %
17	Wood industry, goods of wood and cork and woven goods of bamboo, rattan and the like	2.63	0.49	0.012	0.48 %	0.36 %	0.95 %	0.03 %	0.00 %
18	Paper industry and paper goods, printing and reproduction of recording media	2.64	0.44	0.007	1.07 %	0.73 %	0.54 %	0.13 %	0.00 %
19	Chemical industry, pharmaceutical and traditional medicines	2.37	0.35	0.005	2.53 %	1.31 %	0.47 %	1.82 %	0.00 %
20	Rubber industry, rubber goods and plastics	2.54	0.41	0.008	0.62 %	0.32 %	0.33 %	0.23 %	0.00 %

Code	Sector	Type-II Multiplier			Share of output	Share of income	Share of employment	Share of household consumption	Share of government consumption
		Output	Income	Employment					
21	Industrial non-metallic quarrying	2.68	0.51	0.010	0.58 %	0.60 %	0.91 %	0.04 %	0.00 %
22	Basic metal industry	2.31	0.31	0.004	1.70 %	0.75 %	0.26 %	0.00 %	0.00 %
23	Metal goods industry, computers, electronic goods, optics, and electrical equipment	2.31	0.42	0.006	2.19 %	1.90 %	1.02 %	0.94 %	0.00 %
24	Industrial machinery and supplies n.e.c.	2.31	0.39	0.005	0.45 %	0.30 %	0.09 %	0.03 %	0.00 %
25	Transportation equipment industry	2.61	0.55	0.006	1.53 %	1.70 %	0.35 %	1.57 %	0.00 %
26	Furniture industry	2.52	0.49	0.016	0.21 %	0.20 %	0.63 %	0.23 %	0.00 %
27	Other processing industries, repair and installation services of machinery and equipment	2.38	0.39	0.007	0.19 %	0.14 %	0.15 %	0.20 %	0.00 %
28	Electricity	3.15	0.32	0.004	2.55 %	0.54 %	0.20 %	2.47 %	0.00 %
29	Gas procurement and ice production	1.94	0.24	0.004	0.11 %	0.04 %	0.05 %	0.00 %	0.00 %
30	Water procurement, waste management, waste and recycling	2.13	0.34	0.029	0.05 %	0.04 %	0.41 %	0.14 %	0.04 %
31	Construction	2.68	0.52	0.007	13.67 %	12.61 %	6.51 %	0.38 %	0.00 %
32	Car trade, motorcycles and reparations	2.45	0.61	0.011	1.53 %	2.53 %	2.63 %	2.45 %	0.00 %
33	Big and retail trading, not cars and motorcycles	2.40	0.57	0.011	8.62 %	12.88 %	16.11 %	12.24 %	0.04 %
34	Rail transport	3.17	0.81	0.014	0.11 %	0.21 %	0.24 %	0.15 %	0.00 %
35	Land transportation	2.46	0.44	0.007	3.22 %	2.64 %	1.81 %	4.42 %	0.00 %
36	Sea freight	2.64	0.41	0.006	0.53 %	0.29 %	0.15 %	0.56 %	0.00 %
37	Lake and river crossing shuttles	2.76	0.52	0.006	0.22 %	0.21 %	0.03 %	0.34 %	0.00 %
38	Air freight	2.65	0.45	0.006	1.85 %	1.36 %	0.22 %	4.18 %	0.00 %
39	Warehousing and transport support services, postal and courier	2.55	0.49	0.010	1.28 %	1.32 %	1.84 %	1.06 %	0.00 %
40	Accommodation provision	2.43	0.50	0.015	0.48 %	0.58 %	1.29 %	0.68 %	0.00 %
41	Provision of food and beverages	2.88	0.57	0.017	2.77 %	2.96 %	6.69 %	9.12 %	0.00 %
42	Information and communication services	2.33	0.43	0.005	3.84 %	3.39 %	0.73 %	5.71 %	0.27 %
43	Financial intermediation services other than the central bank	2.23	0.54	0.006	1.89 %	2.67 %	0.88 %	1.66 %	0.89 %

Code	Sector	Type-II Multiplier			Share of output	Share of income	Share of employment	Share of household consumption	Share of government consumption
		Output	Income	Employment					
44	Insurance and pension funds	1.99	0.43	0.004	0.52 %	0.55 %	0.10 %	1.43 %	0.00 %
45	Other financial services	2.73	0.74	0.007	0.48 %	0.87 %	0.13 %	0.41 %	0.00 %
46	Financial support services	2.73	0.74	0.007	0.06 %	0.11 %	0.02 %	0.05 %	0.00 %
47	Real Estate	1.75	0.22	0.003	1.60 %	0.56 %	0.35 %	4.32 %	0.00 %
48	Company services	2.54	0.53	0.008	1.95 %	2.18 %	1.76 %	0.32 %	0.00 %
49	Government administration, defence and mandatory social security	3.26	0.87	0.012	3.16 %	6.96 %	3.50 %	0.05 %	60.11 %
50	Education services	3.07	0.96	0.016	2.16 %	6.00 %	5.06 %	3.83 %	19.98 %
51	Health services and social work activities	2.93	0.58	0.010	1.78 %	1.99 %	1.68 %	2.87 %	18.32 %
52	Other services	2.82	0.65	0.014	2.11 %	3.30 %	4.46 %	3.66 %	0.00 %

Source: Authors' calculations

Appendix 2. Elasticity sensitivity analysis

As part of the sensitivity analysis, this study tests several sets of cigarette price elasticity estimates. Table A2.1 presents results for the most comprehensive reform scenario, which combines a 50 percent increase in cigarette excise tax rates with simplifying the current eight-tier excise structure to four tiers, and examines how the estimated impacts vary under alternative elasticity assumptions.

Table A2.1 Sensitivity of estimated impacts to alternative elasticity assumptions

	Lower-bound elasticity	Main analysis	Upper-bound elasticity	SUSENAS re-estimation
Own-price elasticity of SPM	-0.300	-0338	-0.967	-1.496
Own-price elasticity of SKM	-0.231	-0.800	-0840	-1.249
Own-price elasticity of SKT	-0.231	-0.800	-0840	-1.315
Cross-price elasticity:				
SPM→ SKM	0.163	0.163	0.163	-0.051
SPM→ SKT	0.163	0.163	0.163	0.299
SKM→ SPM	0.163	0.163	0.163	-0.603
SKM→ SKT	0.200	0.350	0.500	0.110
SKT→SPM	0.163	0.163	0.163	0.594
SKT→ SKM	0.200	0.350	0.500	0.018
Changes in consumption (%)				
Change in cigarette consumption — SKT	8.1	0.5	5.7	-17.7
Change in cigarette consumption — SKM	0.6	-19.5	-17.6	-53.5
Change in cigarette consumption — SPM	-0.9	-0.3	-21.0	-59.9
Change in total cigarette consumption				
Total additional tax revenue (IDR Trillion)	180.82	109.56	118.10	-37.40
Additional cigarette excise revenue	147.55	91.36	97.76	-24.23
Additional subnational tax revenue	14.75	9.13	9.77	-2.42
Additional VAT revenue	18.51	9.06	10.57	-10.75
Macroeconomic impacts in simulation C *(most optimal government allocation)*				
Impact on output (Rp trillion)	508.74	315.09	337.11	-82.30
Impact on income (Rp trillion)	131.38	81.68	87.28	-20.51
Impact on employment (thousand)	1,685	1,145	1,223	-33

Source: Authors' calculations

All elasticity estimates in the analysis use the Deaton methodology and household expenditure-based unit values,[24,25] providing a broadly consistent estimation approach across the alternative elasticity specifications. However, the re-estimated elasticities based on pooled 2017–2024 SUSENAS data imply substantially more elastic cigarette demand than the estimates used in the main analysis and those generally reported in the broader tobacco economics literature, where cigarette demand is typically price inelastic.[25] Applied to the 50 % reform scenario, these higher elasticities imply a much larger reduction in cigarette consumption, as the percentage decline in demand exceeds the corresponding increase in cigarette prices. This results in a contraction in cigarette-sector activity and, ultimately, a negative simulated net impact on economic output, in contrast to the positive net macroeconomic impact estimated under the main analysis.

The more recent SUSENAS results should therefore be interpreted as an alternative sensitivity case rather than as a prediction of the reform's likely economic effects. Importantly, these estimates still yield positive net macroeconomic effects under the 10 % and 25 % excise tax increases (Table A2.2), suggesting that the negative result emerges only when the substantially higher and atypically elastic demand response is combined with the largest tax increase examined in this study. This finding underscores that the estimated macroeconomic effects depend on both the magnitude of the tax reform and the assumed responsiveness of cigarette demand.

Table A2.2 Impacts using 2020–2024 SUSENAS elasticities across alternative excise tax increases under comprehensive tier simplification

	10 % (4 tiers)	25 % (4 tiers)	50 % (4 tiers)
Changes in consumption (%)			
Change in cigarette consumption — SKT	-11.3	-13.7	-17.7
Change in cigarette consumption — SKM	-15.9	-30.0	-53.5
Change in cigarette consumption — SPM	-10.8	-29.2	-59.9
Change in total cigarette consumption	-13.7	-22.7	-37.8
Additional total tax revenue (IDR Trillion)	8.35	40	-37.40
Macroeconomic impacts in simulation C *(most optimal government allocation)*			
Impact on output (Rp trillion)	32.33	13.97	-83.30
Impact on income (Rp trillion)	8.75	4.24	-20.51
Impact on employment (thousand)	166.8	167.5	-33

Source: Authors' calculation

Appendix 3. Allocation of government spending scenario (C, D, and E)

Table A3.1 Allocation of government spending under scenario C (business as usual)

	C1				C2				C3			
Full tax pass-through	**SIM C1.1**	**SIM C1.2**	**SIM C1.3**	**SIM C1.4**	**SIM C2.1**	**SIM C2.2**	**SIM C2.3**	**SIM C2.4**	**SIM C3.1**	**SIM C3.2**	**SIM C3.3**	**SIM C3.4**
	10 %	*10 % + 6 tiers (machine simplification)*	*10 % + 6 tiers (hand-roll simplification)*	*10 % + 4 tiers (both type simplification)*	*50 %*	*25 % + 6 tiers (machine simplification)*	*25 % + 6 tiers (hand-roll simplification)*	*25 % + 4 tiers (both type simplification)*	*50 %*	*50 % + 6 tiers (machine simplification)*	*50 % + 6 tiers (hand-roll simplification)*	*50 % + 4 tiers (both type simplification)*
Total additional cigarette tax revenue (Rp trillion)	**18.96**	**25.77**	**36.18**	**43.84**	**44.89**	**49.91**	**65.24**	**71.37**	**81.38**	**81.98**	**107.39**	**109.57**
Additional tax revenue from cigarette excise (Rp trillion)	15.69	21.43	30.26	36.71	37.15	41.45	54.36	59.57	67.41	68.12	89.36	91.37
Additional tax revenue from cigarette subnational tax (Rp trillion)	1.57	2.14	3.03	3.67	3.71	4.15	5.44	5.96	6.74	6.81	8.94	9.14
Additional tax revenue cigarette value added tax (Rp trillion)	1.71	2.20	2.89	3.47	4.03	4.31	5.45	5.85	7.23	7.04	9.09	9.06
Spending to mandated sectors (Rp trillion)	**2.04**	**2.79**	**3.93**	**4.77**	**4.83**	**5.39**	**7.07**	**7.74**	**8.76**	**8.86**	**11.62**	**11.88**
share of cigarette tax revenue (%)	10.8 %	10.8 %	10.9 %	10.9 %	10.8 %	10.8 %	10.8 %	10.9 %	10.8 %	10.8 %	10.8 %	10.8 %
Spending to targeted sectors (Rp trillion)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
share of cigarette tax revenue (%)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Spending to other sectors / business-as-usual (Rp trillion)	**16.92**	**22.99**	**32.25**	**39.07**	**40.06**	**44.52**	**58.18**	**63.62**	**72.62**	**73.12**	**95.77**	**97.69**
share of cigarette tax revenue (%)	89.2 %	89.2 %	89.1 %	89.1 %	89.2 %	89.2 %	89.2 %	89.1 %	89.2 %	89.2 %	89.2 %	89.2 %
A. Spending allocation of cigarette excise revenue												
Additional tax revenue from cigarette excise (Rp trillion)	**15.69**	**21.43**	**30.26**	**36.71**	**37.15**	**41.45**	**54.36**	**59.57**	**67.41**	**68.12**	**89.36**	**91.37**
A1. Mandated sectors	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**
Seasonal and Annual Estate Crops (sector 3)	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %
Chemical, Pharmaceutical and Traditional Medicine Industry (sector 19)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Other Processing Industries, Machinery Repair and Installation Services (sector 27)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Water Supply, Waste Management and Recycling (sector 30)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Information and Communication Services (sector 42)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Government Administration, Defence and Compulsory Social Security (sector 49) — Regional	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %
Education Services (sector 50)	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %
Health Services and Social Work Activities - Public (sector 51)	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %
Health Services and Social Work Activities - Private (sector 51)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
A2. Targeted sectors	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**
Government Admin. - Discretionary NHI Support (sector 49)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Health Services - Discretionary Public (sector 51)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Health Services - Discretionary Private (sector 51)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Chemical, Pharmaceutical - Discretionary (sector 19)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Medical Equipment - Discretionary (sector 27)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Education Services - Discretionary (sector 50)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Tobacco Control Campaign - Discretionary ICT (sector 42)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Sectors related to social assistance programs:												
Food and Beverage Industry (sector 13)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %

	C1				C2				C3			
Full tax pass-through	**SIM C1.1**	**SIM C1.2**	**SIM C1.3**	**SIM C1.4**	**SIM C2.1**	**SIM C2.2**	**SIM C2.3**	**SIM C2.4**	**SIM C3.1**	**SIM C3.2**	**SIM C3.3**	**SIM C3.4**
	10 %	*10 % + 6 tiers (machine simplification)*	*10 % + 6 tiers (hand-roll simplification)*	*10 % + 4 tiers (both type simplification)*	*50 %*	*25 % + 6 tiers (machine simplification)*	*25 % + 6 tiers (hand-roll simplification)*	*25 % + 4 tiers (both type simplification)*	*50 %*	*50 % + 6 tiers (machine simplification)*	*50 % + 6 tiers (hand-roll simplification)*	*50 % + 4 tiers (both type simplification)*
Education Services - Public (sector 50)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Education Services - Private (sector 50)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Health Services - Public (sector 51)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Health Services - Private (sector 51)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
A3. Other sectors / business-as-usual spending	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**
B. Spending allocation of cigarette subnational tax revenue												
Note: 2.5 % of PRD (Rp trillion) is retained by the central government (Bea Cukai) for customs & excise law enforcement per PMK No. 143 of 2023. The remaining 97.5 % is transferred to regions and allocated 50 %/12.5 %/37.5 % to Gov. Admin—/ Health / NHI Support.												
Additional tax revenue from cigarette subnational tax (Rp trillion)	**1.57**	**2.14**	**3.03**	**3.67**	**3.71**	**4.15**	**5.44**	**5.96**	**6.74**	**6.81**	**8.94**	**9.14**
B1. Mandated sectors (allocation of PRD across central & regional uses)	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**
Government Administration, Defence and Compulsory Social Security (sector 49) — Regional	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %
Health Services and Social Work Activities (sector 51) — Regional	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %
Government Administration - NHI Support (sector 49) — Regional	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %
Government Administration - Central Law Enforcement / Bea Cukai (sector 49)	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %
B2. Targeted sectors	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**
B3. Other sectors / business-as-usual spending	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**
C. Spending allocation of cigarette value-added tax revenue												
Additional tax revenue from cigarette value-added tax (Rp trillion)	**1.71**	**2.20**	**2.89**	**3.47**	**4.03**	**4.31**	**5.45**	**5.85**	**7.23**	**7.04**	**9.09**	**9.06**
C1. Mandated sectors	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
C2. Targeted sectors	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
C3. Other sectors / business-as-usual spending	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %

Source: Authors' calculations based on IO Table 2025 (55 sectors)

Table A3.2 Allocation of government spending under scenario D.I (health-related sectors)

	D1.I				D2.I				D3.I			
Full tax pass-through	**SIM D1.1.I**	**SIM D1.2.I**	**SIM D1.3.I**	**SIM D1.4.I**	**SIM D2.1.I**	**SIM D2.2.I**	**SIM D2.3.I**	**SIM D2.4.I**	**SIM D3.1.I**	**SIM D3.2.I**	**SIM D3.3.I**	**SIM D3.4.I**
	10 %	*10 % + 6 tiers (machine simplification)*	*10 % + 6 tiers (hand-roll simplification)*	*10 % + 4 tiers (both type simplification)*	*50 %*	*25 % + 6 tiers (machine simplification)*	*25 % + 6 tiers (hand-roll simplification)*	*25 % + 4 tiers (both type simplification)*	*50 %*	*50 % + 6 tiers (machine simplification)*	*50 % + 6 tiers (hand-roll simplification)*	*50 % + 4 tiers (both type simplification)*
Total additional cigarette tax revenue (Rp trillion)	**18.96**	**25.77**	**36.18**	**43.84**	**44.89**	**49.91**	**65.24**	**71.37**	**81.38**	**81.98**	**107.39**	**109.57**
Additional tax revenue from cigarette excise (Rp trillion)	15.69	21.43	30.26	36.71	37.15	41.45	54.36	59.57	67.41	68.12	89.36	91.37
Additional tax revenue from cigarette subnational tax (Rp trillion)	1.57	2.14	3.03	3.67	3.71	4.15	5.44	5.96	6.74	6.81	8.94	9.14
Additional tax revenue cigarette value added tax (Rp trillion)	1.71	2.20	2.89	3.47	4.03	4.31	5.45	5.85	7.23	7.04	9.09	9.06
Spending to mandated sectors (Rp trillion)	**2.04**	**2.79**	**3.93**	**4.77**	**4.83**	**5.39**	**7.07**	**7.74**	**8.76**	**8.86**	**11.62**	**11.88**
share of cigarette tax revenue (%)	10.8 %	10.8 %	10.9 %	10.9 %	10.8 %	10.8 %	10.8 %	10.9 %	10.8 %	10.8 %	10.8 %	10.8 %
Spending to targeted sectors (Rp trillion)	**15.21**	**20.79**	**29.35**	**35.61**	**36.03**	**40.21**	**52.73**	**57.78**	**65.39**	**66.08**	**86.68**	**88.63**
share of cigarette tax revenue (%)	80.2 %	80.7 %	81.1 %	81.2 %	80.3 %	80.6 %	80.8 %	81.0 %	80.4 %	80.6 %	80.7 %	80.9 %
Spending to other sectors / business-as-usual (Rp trillion)	**1.71**	**2.20**	**2.89**	**3.47**	**4.03**	**4.31**	**5.45**	**5.85**	**7.23**	**7.04**	**9.09**	**9.06**
share of cigarette tax revenue (%)	9.0 %	8.5 %	8.0 %	7.9 %	9.0 %	8.6 %	8.4 %	8.2 %	8.9 %	8.6 %	8.5 %	8.3 %
A. Spending allocation of cigarette excise revenue												
Additional tax revenue from cigarette excise (Rp trillion)	**15.69**	**21.43**	**30.26**	**36.71**	**37.15**	**41.45**	**54.36**	**59.57**	**67.41**	**68.12**	**89.36**	**91.37**
A1. Mandated sectors	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**
Seasonal and Annual Estate Crops (sector 3)	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %
Chemical, Pharmaceutical and Traditional Medicine Industry (sector 19)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Other Processing Industries, Machinery Repair and Installation Services (sector 27)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Water Supply, Waste Management and Recycling (sector 30)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Information and Communication Services (sector 42)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Government Administration, Defence and Compulsory Social Security (sector 49) — Regional	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %
Education Services (sector 50)	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %
Health Services and Social Work Activities - Public (sector 51)	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %
Health Services and Social Work Activities - Private (sector 51)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
A2. Targeted sectors	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**
Government Admin. - Discretionary NHI Support (sector 49)	37.1 %	37.1 %	37.1 %	37.1 %	37.1 %	37.1 %	37.1 %	37.1 %	37.1 %	37.1 %	37.1 %	37.1 %
Health Services - Discretionary Public (sector 51)	12.4 %	12.4 %	12.4 %	12.4 %	12.4 %	12.4 %	12.4 %	12.4 %	12.4 %	12.4 %	12.4 %	12.4 %
Health Services - Discretionary Private (sector 51)	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %
Chemical, Pharmaceutical - Discretionary (sector 19)	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %
Medical Equipment - Discretionary (sector 27)	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %
Education Services - Discretionary (sector 50)	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %
Tobacco Control Campaign - Discretionary ICT (sector 42)	7.9 %	7.9 %	7.9 %	7.9 %	7.9 %	7.9 %	7.9 %	7.9 %	7.9 %	7.9 %	7.9 %	7.9 %

	D1.I				D2.I				D3.I			
Full tax pass-through	**SIM D1.1.I**	**SIM D1.2.I**	**SIM D1.3.I**	**SIM D1.4.I**	**SIM D2.1.I**	**SIM D2.2.I**	**SIM D2.3.I**	**SIM D2.4.I**	**SIM D3.1.I**	**SIM D3.2.I**	**SIM D3.3.I**	**SIM D3.4.I**
	10 %	*10 % + 6 tiers (machine simplification)*	*10 % + 6 tiers (hand-roll simplification)*	*10 % + 4 tiers (both type simplification)*	*50 %*	*25 % + 6 tiers (machine simplification)*	*25 % + 6 tiers (hand-roll simplification)*	*25 % + 4 tiers (both type simplification)*	*50 %*	*50 % + 6 tiers (machine simplification)*	*50 % + 6 tiers (hand-roll simplification)*	*50 % + 4 tiers (both type simplification)*
Sectors related to social assistance programs:												
Food and Beverage Industry (sector 13)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Education Services - Public (sector 50)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Education Services - Private (sector 50)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Health Services - Public (sector 51)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Health Services - Private (sector 51)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
A3. Other sectors / business-as-usual spending	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**
B. Spending allocation of cigarette subnational tax revenue												
Note: 2.5 % of PRD (Rp trillion) is retained by central government (Bea Cukai) for customs & excise law enforcement per PMK No. 143 of 2023. Remaining 97.5 % is transferred to regions and allocated 50 %/12.5 %/37.5 % to Gov. Admin. / Health / NHI Support.												
Additional tax revenue from cigarette subnational tax (Rp trillion)	**1.57**	**2.14**	**3.03**	**3.67**	**3.71**	**4.15**	**5.44**	**5.96**	**6.74**	**6.81**	**8.94**	**9.14**
B1. Mandated sectors (allocation of PRD across central & regional uses)	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**
Government Administration, Defence and Compulsory Social Security (sector 49) — Regional	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %
Health Services and Social Work Activities (sector 51) — Regional	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %
Government Administration - NHI Support (sector 49) — Regional	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %
Government Administration - Central Law Enforcement / Bea Cukai (sector 49)	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %
B2. Targeted sectors	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**
B3. Other sectors / business-as-usual spending	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**
C. Spending allocation of cigarette value added tax revenue												
Additional tax revenue from cigarette value added tax (Rp trillion)	**1.71**	**2.20**	**2.89**	**3.47**	**4.03**	**4.31**	**5.45**	**5.85**	**7.23**	**7.04**	**9.09**	**9.06**
C1. Mandated sectors	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
C2. Targeted sectors	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
C3. Other sectors / business-as-usual spending	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %

Source: Authors' calculations based on IO Table 2025 (55 sectors)

Table A3.3 Allocation of government spending under scenario D.II (health financing and service delivery)

	D1.II				D2.II				D3.II			
Full tax pass-through	**SIM D1.1.II**	**SIM D1.2.II**	**SIM D1.3.II**	**SIM D1.4.II**	**SIM D2.1.II**	**SIM D2.2.II**	**SIM D2.3.II**	**SIM D2.4.II**	**SIM D3.1.II**	**SIM D3.2.II**	**SIM D3.3.II**	**SIM D3.4.II**
	10 %	*10 % + 6 tiers (machine simplification)*	*10 % + 6 tiers (hand-roll simplification)*	*10 % + 4 tiers (both type simplification)*	*50 %*	*25 % + 6 tiers (machine simplification)*	*25 % + 6 tiers (hand-roll simplification)*	*25 % + 4 tiers (both type simplification)*	*50 %*	*50 % + 6 tiers (machine simplification)*	*50 % + 6 tiers (hand-roll simplification)*	*50 % + 4 tiers (both type simplification)*
Total additional cigarette tax revenue (Rp trillion)	**18.96**	**25.77**	**36.18**	**43.84**	**44.89**	**49.91**	**65.24**	**71.37**	**81.38**	**81.98**	**107.39**	**109.57**
Additional tax revenue from cigarette excise (Rp trillion)	15.69	21.43	30.26	36.71	37.15	41.45	54.36	59.57	67.41	68.12	89.36	91.37
Additional tax revenue from cigarette subnational tax (Rp trillion)	1.57	2.14	3.03	3.67	3.71	4.15	5.44	5.96	6.74	6.81	8.94	9.14
Additional tax revenue from cigarette value-added tax (Rp trillion)	1.71	2.20	2.89	3.47	4.03	4.31	5.45	5.85	7.23	7.04	9.09	9.06
Spending on mandated sectors (Rp trillion)	**2.04**	**2.79**	**3.93**	**4.77**	**4.83**	**5.39**	**7.07**	**7.74**	**8.76**	**8.86**	**11.62**	**11.88**
share of cigarette tax revenue (%)	10.8 %	10.8 %	10.9 %	10.9 %	10.8 %	10.8 %	10.8 %	10.9 %	10.8 %	10.8 %	10.8 %	10.8 %
Spending on targeted sectors (Rp trillion)	**15.21**	**20.79**	**29.35**	**35.61**	**36.03**	**40.21**	**52.73**	**57.78**	**65.39**	**66.08**	**86.68**	**88.63**
share of cigarette tax revenue (%)	80.2 %	80.7 %	81.1 %	81.2 %	80.3 %	80.6 %	80.8 %	81.0 %	80.4 %	80.6 %	80.7 %	80.9 %
Spending on other sectors / business-as-usual (Rp trillion)	**1.71**	**2.20**	**2.89**	**3.47**	**4.03**	**4.31**	**5.45**	**5.85**	**7.23**	**7.04**	**9.09**	**9.06**
share of cigarette tax revenue (%)	9.0 %	8.5 %	8.0 %	7.9 %	9.0 %	8.6 %	8.4 %	8.2 %	8.9 %	8.6 %	8.5 %	8.3 %
A. Spending allocation of cigarette excise revenue												
Additional tax revenue from cigarette excise (Rp trillion)	**15.69**	**21.43**	**30.26**	**36.71**	**37.15**	**41.45**	**54.36**	**59.57**	**67.41**	**68.12**	**89.36**	**91.37**
A1. Mandated sectors	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**
Seasonal and Annual Estate Crops (sector 3)	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %
Chemical, Pharmaceutical and Traditional Medicine Industry (sector 19)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Other Processing Industries, Machinery Repair and Installation Services (sector 27)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Water Supply, Waste Management and Recycling (sector 30)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Information and Communication Services (sector 42)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Government Administration, Defence and Compulsory Social Security (sector 49) — Regional	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %
Education Services (sector 50)	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %
Health Services and Social Work Activities - Public (sector 51)	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %
Health Services and Social Work Activities - Private (sector 51)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
A2. Targeted sectors	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**
Government Admin. - Discretionary NHI Support (sector 49)	49.5 %	49.5 %	49.5 %	49.5 %	49.5 %	49.5 %	49.5 %	49.5 %	49.5 %	49.5 %	49.5 %	49.5 %
Health Services - Discretionary Public (sector 51)	14.9 %	14.9 %	14.9 %	14.9 %	14.9 %	14.9 %	14.9 %	14.9 %	14.9 %	14.9 %	14.9 %	14.9 %
Health Services - Discretionary Private (sector 51)	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %
Chemical, Pharmaceutical - Discretionary (sector 19)	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %
Medical Equipment - Discretionary (sector 27)	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %	5.0 %
Education Services - Discretionary (sector 50)	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %	9.9 %
Tobacco Control Campaign - Discretionary ICT (sector 42)	2.8 %	2.8 %	2.8 %	2.8 %	2.8 %	2.8 %	2.8 %	2.8 %	2.8 %	2.8 %	2.8 %	2.8 %

	D1.II				D2.II				D3.II			
Full tax pass-through	**SIM D1.1.II**	**SIM D1.2.II**	**SIM D1.3.II**	**SIM D1.4.II**	**SIM D2.1.II**	**SIM D2.2.II**	**SIM D2.3.II**	**SIM D2.4.II**	**SIM D3.1.II**	**SIM D3.2.II**	**SIM D3.3.II**	**SIM D3.4.II**
	10 %	*10 % + 6 tiers (machine simplification)*	*10 % + 6 tiers (hand-roll simplification)*	*10 % + 4 tiers (both type simplification)*	*50 %*	*25 % + 6 tiers (machine simplification)*	*25 % + 6 tiers (hand-roll simplification)*	*25 % + 4 tiers (both type simplification)*	*50 %*	*50 % + 6 tiers (machine simplification)*	*50 % + 6 tiers (hand-roll simplification)*	*50 % + 4 tiers (both type simplification)*
Sectors related to social assistance programs:												
Food and Beverage Industry (sector 13)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Education Services - Public (sector 50)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Education Services - Private (sector 50)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Health Services - Public (sector 51)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Health Services - Private (sector 51)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
A3. Other sectors / business-as-usual spending	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**
B. Spending allocation of cigarette subnational tax revenue												
Note: 2.5 % of PRD (Rp trillion) is retained by central government (Bea Cukai) for customs & excise law enforcement per PMK No. 143 of 2023. Remaining 97.5 % is transferred to regions and allocated 50 %/12.5 %/37.5 % to Gov. Admin. / Health / NHI Support.												
Additional tax revenue from cigarette subnational tax (Rp trillion)	**1.57**	**2.14**	**3.03**	**3.67**	**3.71**	**4.15**	**5.44**	**5.96**	**6.74**	**6.81**	**8.94**	**9.14**
B1. Mandated sectors (allocation of PRD across central & regional uses)	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**
Government Administration, Defence and Compulsory Social Security (sector 49) — Regional	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %
Health Services and Social Work Activities (sector 51) — Regional	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %
Government Administration - NHI Support (sector 49) — Regional	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %
Government Administration - Central Law Enforcement / Bea Cukai (sector 49)	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %
B2. Targeted sectors	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**
B3. Other sectors / business-as-usual spending	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**
C. Spending allocation of cigarette value added tax revenue												
Additional tax revenue from cigarette value added tax (Rp trillion)	**1.71**	**2.20**	**2.89**	**3.47**	**4.03**	**4.31**	**5.45**	**5.85**	**7.23**	**7.04**	**9.09**	**9.06**
C1. Mandated sectors	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
C2. Targeted sectors	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
C3. Other sectors / business-as-usual spending	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %

Source: Authors' calculations based on IO Table 2025 (55 sectors)

Table A3.4 Allocation of government spending under scenario E (social assistance program)

	E1				E2				E3			
Full tax pass-through	**SIM E1.1**	**SIM E1.2**	**SIM E1.3**	**SIM E1.4**	**SIM E2.1**	**SIM E2.2**	**SIM E2.3**	**SIM E2.4**	**SIM E3.1**	**SIM E3.2**	**SIM E3.3**	**SIM E3.4**
	10 %	*10 % + 6 tiers (machine simplification)*	*10 % + 6 tiers (hand-roll simplification)*	*10 % + 4 tiers (both type simplification)*	*50 %*	*25 % + 6 tiers (machine simplification)*	*25 % + 6 tiers (hand-roll simplification)*	*25 % + 4 tiers (both type simplification)*	*50 %*	*50 % + 6 tiers (machine simplification)*	*50 % + 6 tiers (hand-roll simplification)*	*50 % + 4 tiers (both type simplification)*
Total additional cigarette tax revenue (Rp trillion)	**18.96**	**25.77**	**36.18**	**43.84**	**44.89**	**49.91**	**65.24**	**71.37**	**81.38**	**81.98**	**107.39**	**109.57**
Additional tax revenue from cigarette excise (Rp trillion)	15.69	21.43	30.26	36.71	37.15	41.45	54.36	59.57	67.41	68.12	89.36	91.37
Additional tax revenue from cigarette subnational tax (Rp trillion)	1.57	2.14	3.03	3.67	3.71	4.15	5.44	5.96	6.74	6.81	8.94	9.14
Additional tax revenue from cigarette value-added tax (Rp trillion)	1.71	2.20	2.89	3.47	4.03	4.31	5.45	5.85	7.23	7.04	9.09	9.06
Spending on mandated sectors (Rp trillion)	**2.04**	**2.79**	**3.93**	**4.77**	**4.83**	**5.39**	**7.07**	**7.74**	**8.76**	**8.86**	**11.62**	**11.88**
share of cigarette tax revenue (%)	10.8 %	10.8 %	10.9 %	10.9 %	10.8 %	10.8 %	10.8 %	10.9 %	10.8 %	10.8 %	10.8 %	10.8 %
Spending on targeted sectors (Rp trillion)	**15.21**	**20.79**	**29.35**	**35.61**	**36.03**	**40.21**	**52.73**	**57.78**	**65.39**	**66.08**	**86.68**	**88.63**
share of cigarette tax revenue (%)	80.2 %	80.7 %	81.1 %	81.2 %	80.3 %	80.6 %	80.8 %	81.0 %	80.4 %	80.6 %	80.7 %	80.9 %
Spending on other sectors / business-as-usual (Rp trillion)	**1.71**	**2.20**	**2.89**	**3.47**	**4.03**	**4.31**	**5.45**	**5.85**	**7.23**	**7.04**	**9.09**	**9.06**
share of cigarette tax revenue (%)	9.0 %	8.5 %	8.0 %	7.9 %	9.0 %	8.6 %	8.4 %	8.2 %	8.9 %	8.6 %	8.5 %	8.3 %
A. Spending allocation of cigarette excise revenue												
Additional tax revenue from cigarette excise (Rp trillion)	**15.69**	**21.43**	**30.26**	**36.71**	**37.15**	**41.45**	**54.36**	**59.57**	**67.41**	**68.12**	**89.36**	**91.37**
A1. Mandated sectors	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**	**3 %**
Seasonal and Annual Estate Crops (sector 3)	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %	0.8 %
Chemical, Pharmaceutical and Traditional Medicine Industry (sector 19)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Other Processing Industries, Machinery Repair and Installation Services (sector 27)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Water Supply, Waste Management and Recycling (sector 30)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Information and Communication Services (sector 42)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
Government Administration, Defence and Compulsory Social Security (sector 49) — Regional	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %	1.1 %
Education Services (sector 50)	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %
Health Services and Social Work Activities - Public (sector 51)	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %	0.4 %
Health Services and Social Work Activities - Private (sector 51)	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %	0.1 %
A2. Targeted sectors	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**	**97.0 %**
Government Admin. - Discretionary NHI Support (sector 49)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Health Services - Discretionary Public (sector 51)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Health Services - Discretionary Private (sector 51)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Chemical, Pharmaceutical - Discretionary (sector 19)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Medical Equipment - Discretionary (sector 27)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Education Services - Discretionary (sector 50)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Tobacco Control Campaign - Discretionary ICT (sector 42)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %

	E1				E2				E3			
Full tax pass-through	**SIM E1.1**	**SIM E1.2**	**SIM E1.3**	**SIM E1.4**	**SIM E2.1**	**SIM E2.2**	**SIM E2.3**	**SIM E2.4**	**SIM E3.1**	**SIM E3.2**	**SIM E3.3**	**SIM E3.4**
	10 %	*10 % + 6 tiers (machine simplifica-tion)*	*10 % + 6 tiers (hand-roll simplifica-tion)*	*10 % + 4 tiers (both type simplifica-tion)*	*50 %*	*25 % + 6 tiers (machine simplifica-tion)*	*25 % + 6 tiers (hand-roll simplifica-tion)*	*25 % + 4 tiers (both type simplifica-tion)*	*50 %*	*50 % + 6 tiers (machine simplifica-tion)*	*50 % + 6 tiers (hand-roll simplifica-tion)*	*50 % + 4 tiers (both type simplifica-tion)*
Sectors related to social assistance programs:												
Food and Beverage Industry (sector 13)	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %	30.0 %
Education Services - Public (sector 50)	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %
Education Services - Private (sector 50)	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %
Health Services - Public (sector 51)	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %	17.0 %
Health Services - Private (sector 51)	16.0 %	16.0 %	16.0 %	16.0 %	16.0 %	16.0 %	16.0 %	16.0 %	16.0 %	16.0 %	16.0 %	16.0 %
A3. Other sectors / business-as-usual spending	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**	**0.0 %**
B. Spending allocation of cigarette subnational tax revenue												
Note: The central government (Bea Cukai) retains 2.5 % of PRD (Rp trillion) for customs & excise law enforcement under PMK No. 143 of 2023. The remaining 97.5 % is transferred to regions and allocated 50 %/12.5 %/37.5 % to Gov. Admin—/Health / NHI Support.												
Additional tax revenue from cigarette subnational tax (Rp trillion)	**1.57**	**2.14**	**3.03**	**3.67**	**3.71**	**4.15**	**5.44**	**5.96**	**6.74**	**6.81**	**8.94**	**9.14**
B1. Mandated sectors (allocation of PRD across central & regional uses)	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**
Government Administration, Defence and Compulsory Social Security (sector 49) — Regional	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %	48.75 %
Health Services and Social Work Activities (sector 51) — Regional	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %	12.1875 %
Government Administration - NHI Support (sector 49) — Regional	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %	36.5625 %
Government Administration - Central Law Enforcement / Bea Cukai (sector 49)	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %	2.5 %
B2. Targeted sectors	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**
B3. Other sectors / business-as-usual spending	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**	**0 %**
C. Spending allocation of cigarette value-added tax revenue												
Additional tax revenue from cigarette value-added tax (Rp trillion)	**1.71**	**2.20**	**2.89**	**3.47**	**4.03**	**4.31**	**5.45**	**5.85**	**7.23**	**7.04**	**9.09**	**9.06**
C1. Mandated sectors	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
C2. Targeted sectors	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
C3. Other sectors / business-as-usual spending	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %

Source: Authors' calculations based on IO Table 2025 (55 sectors)

cisdi

Jl. Probolinggo No.40C 1, RT.1/RW.2, Kec. Gondangdia,
Kec. Menteng, Kota Jakarta Pusat, Daerah Khusus
Ibukota Jakarta 10350