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Analysis of the Increase in the Imposition of 11% Value Added Tax Rates on the Price of Packaging Cooking Oil and General Inflation and Food Price Inflation

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ABSTRACT
This study is significant as the tax policy, namely an 11% increase in VAT rates, may impact the economy by elevating cooking oil prices and contributing to overall inflation and food inflation. This study aims to examine the rise in the application of an 11% VAT on bottled cooking oil and other food products. The research model employs a quantitative research methodology. The research employs secondary data sourced from the National Socio-Economic Survey (Susenas) conducted by the Central Statistics Agency (BPS), badanpangan.go.id, and Bank Indonesia. The data spans from March 2021 to July 2024 and encompasses a panel of 34 provinces. The implementation of an 11% VAT rate substantially elevates the price of cooking oil. The average price of cooking oil prior to the 11% VAT was IDR 15,950 per liter, however the price subsequent to the 11% VAT rose by 15.05%, resulting in an average of IDR 18,350 per liter. Simultaneously, oil prices exert a favorable and strong influence on the escalation of general price inflation and food price inflation, quantified at 0.0002.

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INTRODUCTION

Tax income in Indonesia from 2015 to 2023 is mostly comprised of Income Tax (PPh), accounting for around 47–51%, followed by Value Added Tax (PPN), which constitutes 32–36% of the overall tax revenue. During this era, the proportion of tax revenue from income tax (PPh) exhibited a decline, while the proportion of tax revenue derived from value-added tax (VAT) and luxury goods sales tax (PPnBM) showed an upward trend. The rising proportion of tax revenue derived from VAT suggests that future tax revenue will prompt the government to augment VAT revenue as a replacement for the correspondingly declining PPh revenue.

In developing nations, VAT constitutes the primary source of revenue, but in affluent nations, income tax assumes greater significance [1]. Countries have modified VAT rates and frameworks to enhance income. For instance, augmenting VAT rates or enhancing the efficiency of VAT collection might substantially influence revenue. The implementation of

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VAT in new areas or industries, along with the diminishment of exemptions, can enhance revenue [2], [3].

The rise in VAT income is inextricably linked to several critical elements. The primary variables contributing to the rise in VAT revenue share are efficiency and stability. This tax system is seen as efficient, minimizing compliance costs and rent-seeking behavior, therefore enhancing societal welfare. Value Added Tax (VAT) is frequently employed to address the rising demand for public expenditure. The extensive foundation and consumption-driven characteristics provide it a dependable revenue source [4].

Regarding state revenue contributions, VAT is a more effective tax compared to others, including income tax. In established industrialized countries, the introduction of VAT is already effective [4, 5]. The escalation of VAT rates affects the potential revenue from value added tax (VAT) (Ilham et al, 2024). According to Azaria and Robinson's research, in the medium term, government revenues may increase due to the gradual implementation of VAT rate hikes, such as a 2.5% annual increase over four years, which positively affects government revenues, GDP growth, and household consumption [5].

In 2023, tax receipts from VAT and PPnBM amounted to IDR 764.3 trillion, achieving 104.7% of the target and reflecting an 11.2% growth. Nonetheless, despite the rise in VAT receipts, the total remained inferior to that of PPh. This indicates that, due to the emphasis on Income Tax revenues thus far, there remains untapped potential for VAT exploration. The lack of modifications to VAT rates and the reorganization of categories of products and services designated as BKP/BKPTW or JKP indicates that VAT revenue policies are subject to optimization. Enhancing VAT revenues can be achieved by broadening the VAT base or elevating rates. The VAT rates in Indonesia are deemed suboptimal [6], hence presenting opportunities for rate enhancement. The government has instituted a policy of incrementally raising VAT rates: 10% from 1983 to 2021, 11% from 2021 to 2024, and 12% commencing in 2025. The rationale for the policy of elevating the rates is as follows: 1) Accelerating economic recovery; 2) Promoting economic growth; 3) Enhancing the budget deficit; 4) Augmenting the tax ratio. Inadequate state income can undermine economic stability. The study conducted by Jaworski and Olipra [7] aimed at enhancing purchasing power was executed by the Polish Government in February 2022, through the reduction of the VAT rate on essential food items from 5% to 0% to mitigate elevated inflation. The government has endeavored to augment state revenues, one method being the reassessment of VAT application for items in Indonesia. What will be the economic impact if VAT is applied to basic necessity commodities? Cooking oil is one of the items affected by an 11% rise in VAT rate. Cooking oil is a fundamental necessity for the Indonesian populace, derived from palm oil products, specifically Crude Palm Oil (CPO). Cooking oil is a fundamental necessity for the Indonesian populace. Cooking oil use consistently rises annually, correlating with population growth and growing per capita income. The anticipated cooking oil use for 2022 is 11.9 liters per capita, reflecting a 48.4% growth over the past 12 years. Cooking oil is the third most important basic necessity for the community, so it is mandatory to fulfill household needs.

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Moreover, cooking oil plays a crucial role in sustaining economic stability in Indonesia. Cooking oil comprises packaged and bulk varieties. Research by Putra et al. [8] on the price elasticity of bulk cooking oil in Denpasar identifies several determinants of demand: the price of bulk cooking oil, the price of packaged cooking oil, the price of chicken, the number of family members, and household income. The price of bulk cooking oil exhibits elasticity. Cross elasticity indicates that bottled cooking oil functions as a substitute good, while chicken serves as a complimentary good. Income elasticity indicates that bulk cooking oil is an inferior good.

According to research by Healton et al. [9], which examines the determinants affecting the demand and supply of cooking oil and assesses the equilibrium price of premium cooking oil. The analysis results indicate that consumer income, population, and demand lag factors significantly affect the demand for premium cooking oil, while consumer prices, substitute prices, population, brands, consumer income, and demand delays also exert a substantial influence.

Maximizing VAT collections should ideally consider economic dynamics, as VAT is intrinsically linked to economic growth [10]. Simon Kuznets defined economic growth as the capacity of a nation to augment its productive output [11]. Value Added Tax (VAT) is levied on all stages of production and distribution. Consequently, VAT is applied in economic transactions, resulting in the ultimate consumer or buyer bearing the tax cost. As manufacturing and economic activities escalate, VAT receipts may rise. Modifications pertaining to value-added tax are experienced with great caution and sensitivity, since it is a fiscal mechanism capable of inducing substantial fluctuations in tax revenues inside each nation [3]. The tax system is not neutral regarding inflation in practice, despite attempts by several countries to achieve inflation neutrality in their tax systems [12]. The implementation of VAT on a commodity can influence both its demand and supply, particularly the demand for that commodity. The tax levied on a commodity constitutes an economic cost of its production, hence potentially elevating its price. An increase in the price of an item may diminish demand, since it becomes more costly for consumers. This is evident from the elasticity of demand for a commodity. Multiple factors affect the demand for a commodity, including commodity pricing, income levels, prices of substitute items, consumer preferences, and expectations. In economics, demand will fluctuate as a function of elasticity when these variables alter. Research by Chik et al. [13] examined the effects of rising palm oil prices on food producers (directly) and consumers (indirectly) in Malaysia, revealing that the most substantial cost alterations originated from restaurants at 52.0%, followed by palm oil at 29.6% and restaurants again at 17.4%.

A study indicated that the rise in VAT had minimal impact on inflation, which was mostly influenced by increases in commodity prices, such as cooking oil and fuel oil (BBM) [14]. The rise in cooking oil prices significantly affected the sales of food dealers, as cooking oil is a primary ingredient in food processing [15]. Lowering VAT rates in Poland may decrease the inflation rate. It is essential to examine the impact of rising VAT rates on a publicly consumed goods [7].

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An impact analysis of the VAT rate increase is necessary to ensure the effective implementation of the policy change without detrimental effects on the community and the economy. Cooking oil is a widely utilized product, warranting an investigation of price fluctuations. Consequently, the findings from the examination of fluctuations in cooking oil commodity prices may inform policy decisions regarding the augmentation of VAT rates. The implementation of VAT on goods should not influence individuals' purchasing power, as indicated by prior studies, including research on the impact of VAT on the purchasing power of motorcycles, which transitioned from luxury items to essential means of transportation, demonstrating that VAT does not affect purchasing power [16]. Research by Kalinin [17] and Semenova [18] indicates that elevated VAT rates may lead to an escalation in the prices of goods and services, thus diminishing consumer demand and exacerbating inflation. Businesses may encounter financial strain due to rising VAT rates, impacting their profitability and potentially resulting in elevated costs for customers [1, 19].

This study aims to analyze the impact of the 11% increase in VAT rates on the price of packaged cooking oil, as well as the subsequent effect of the rising price of packaged cooking oil on overall inflation and food inflation. Considering the variables elucidated with the subsequent emphasis: What is the impact of the 11% rise in VAT rates on the price of packaged cooking oil? What is the impact of rising packaged cooking oil prices on overall inflation and food inflation?

METHOD

This study analyzes the effect of an increase in the imposition of a tax rate of 11% on the increase in the price of packaged cooking oil and the effect of the increase in the price of cooking oil on general inflation and food inflation as follows:

1. The Effect of the Imposition of a Tax Rate of 11% on the Increase in the Price of Packaged Cooking Oil
   H0: $\mu 1 = \mu 2$
   H1: $\mu 1 \neq \mu 2$
   with: $\mu 1$ is the price of packaged cooking oil before the 11% tax rate and $\mu 2$ is the price of packaged cooking oil after the 11% tax rate.
2. The Effect of the Increase in the Price of Packaged Cooking Oil on General Inflation and Food Inflation.
   Ho: There is no effect of the increase in the price of packaged cooking oil on General Inflation and Food Inflation
   H1: There is an effect of the increase in the price of packaged cooking oil on General Inflation and Food Inflation

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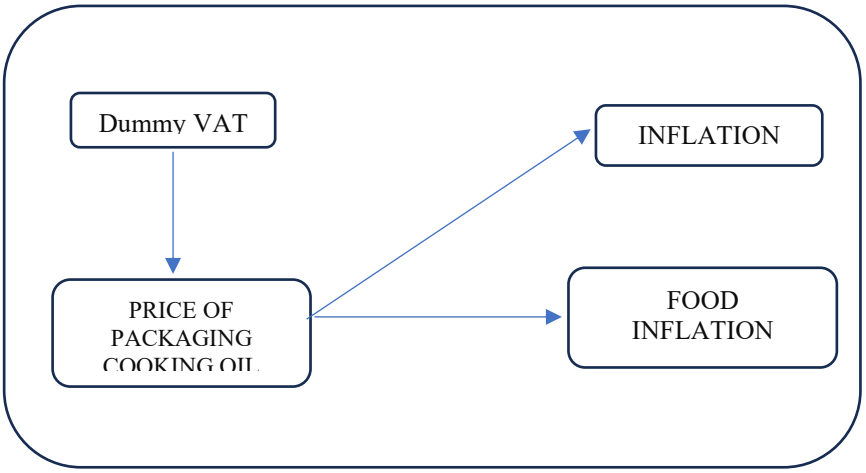

Figure 1. Research Model

Figure 1 illustrates a study model employing a quantitative research methodology. Quantitative research examines social issues by evaluating a theory comprised of variables, quantified numerically, and examined through statistical methods to ascertain the accuracy of the theory's prediction generalization [20].

The research employs secondary data sourced from the National Socio-Economic Survey (Susenas) conducted by the Central Statistics Agency (BPS), badanpangan.go.id, and Bank Indonesia. The data spans from March 2021 to July 2024, utilizing a panel of 34 provinces [21].

The analytical method employed to assess the impact of the 11% VAT imposition on the price increase of packaged cooking oil utilizes the F test (ANOVA). The F test, or ANOVA (Analysis of Variance), is a statistical method employed to ascertain whether significant differences exist among the means of multiple groups or variables. This test is employed when researchers seek to compare multiple groups derived from distinct categorical data to ascertain whether a significant effect exists on the measured variables. The F test (ANOVA) is highly beneficial across various domains, including social science research, scientific experimentation, and industrial product testing.

The analytical approach employed to assess the impact of rising packaged cooking oil prices on overall inflation and food inflation utilizes Structural Equation Modeling (SEM), which integrates factor analysis and path analysis, enabling researchers to examine the interrelations among complex variables to derive a holistic understanding of the model [22]. The model assessing the impact of rising packaged cooking oil prices on overall inflation and food inflation employs Structural Equation Modeling (SEM) with the subsequent models:

General inflation = $\beta 0 + \beta 1$ (price of packed cooking oil) ..... (1)
Price of packaged cooking oil = $\alpha 0 + \alpha 1$ (VAT)
Food Inflation = $\beta 2 + \beta 3$ * Price of Packaged Cooking Oil .....(2)
Cost of packaged cooking oil = $\alpha 0 + \alpha 1$ VAT

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Specification:

β : Intercept of the inflation model
$\beta 1$: Path coefficient of the variable price of packaged cooking oil to inflation
$\beta 2$: Intercept of the food inflation model
$\beta 3$: Path coefficient of the variable price of packaged cooking oil to food inflation
$\alpha 0$: Intercept of the model for the price of packaged cooking oil
$\alpha 1$: Path coefficient for the variable VAT

Model 1 elucidates that general inflation, as the dependent variable, is affected by the price of packaged cooking oil, which serves as the independent variable, while the price of packaged cooking oil, in turn, is influenced by VAT, another independent variable. Model 2 elucidates that food inflation, as a dependent variable, is affected by the price of packed cooking oil, which in turn, as a dependent variable, is influenced by VAT, an independent variable. Models 1 and 2 were examined in conjunction with the SEM model using Smart PLS software.

RESULTS AND DISCUSSION

Descriptive Analysis

The usage of cooking oil is a significant commodity for the Indonesian populace, as evidenced by the following data: The nationwide use of bottled cooking oil exhibited fluctuations while demonstrating an upward tendency from March 2021 to July 2024. In March 2021, national oil consumption was 13,496 tons, peaking at 24,806 tons in May 2022. The consumption of packaged cooking oil experienced a significant decline until August 2022 and was generally stable until July 2024. Figure 1 indicates a substantial rise in the consumption of packaged cooking oil.

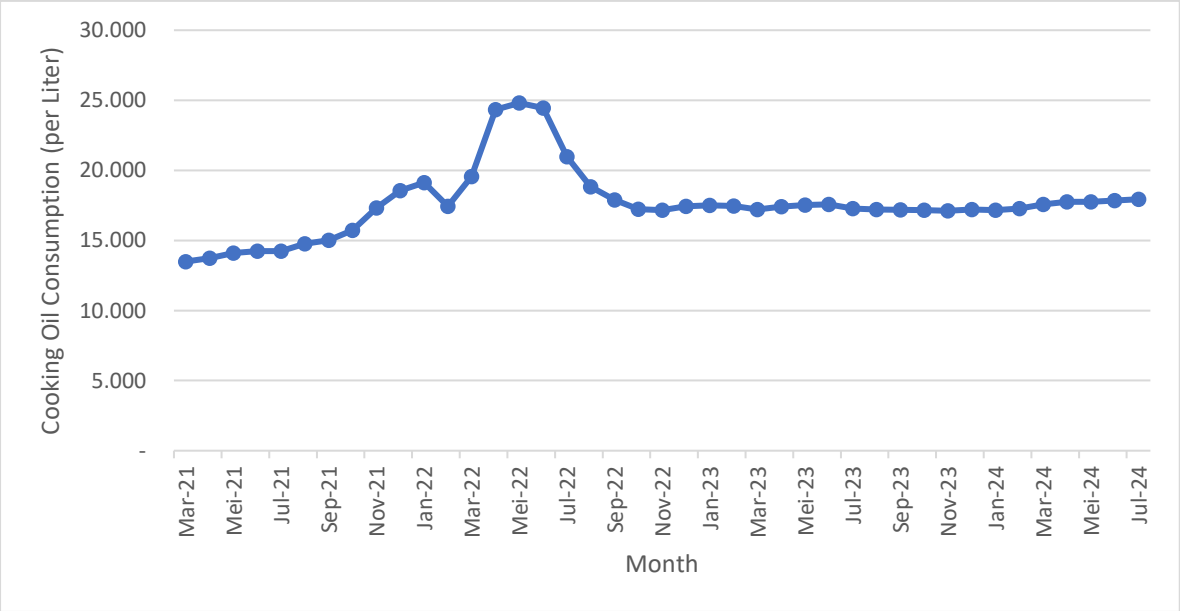

Figure 2. National Consumption of Packaged Cooking Oil

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The consumption of packaged cooking oil is a significant commodity for the Indonesian populace, as seen by the provincial data on packaged cooking oil consumption in Indonesia. The largest average expenditure on packaged cooking oil in 2022 was in Papua province, while the lowest was in Central Java in 2023, as illustrated in Figure 3.

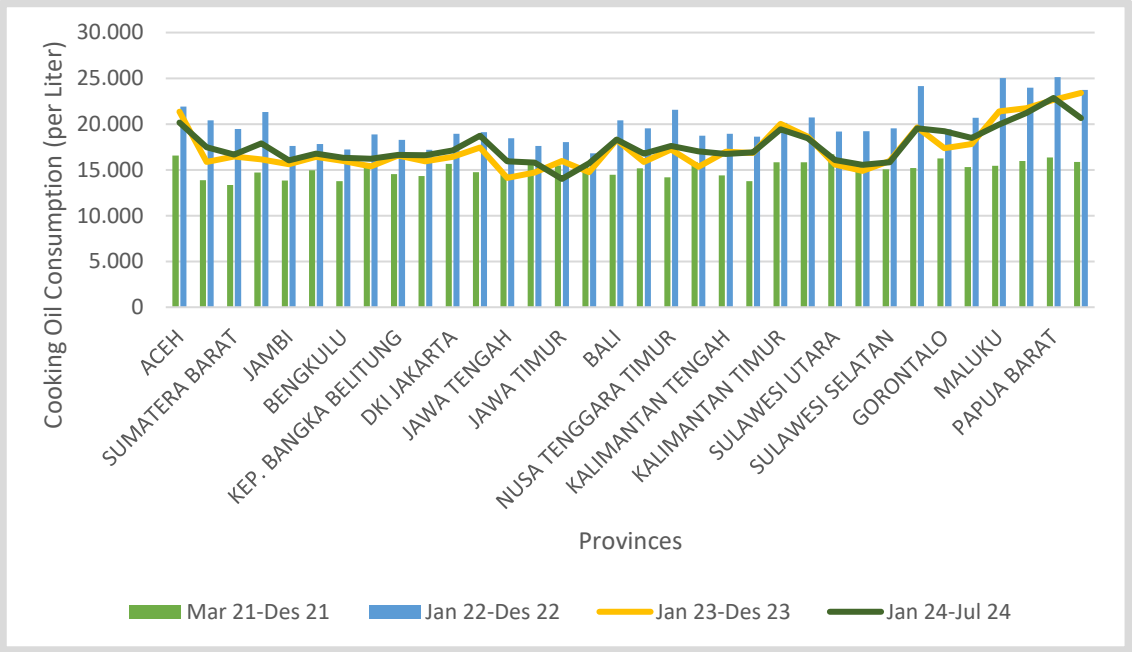

Figure 3. National Packaged Cooking Oil Consumption per Province

The elucidation of descriptive statistics is presented in Table 1. The data centralization measures encompass the mean, standard deviation, minimum, and maximum values of the demand variable for packaged cooking oil, the price of packaged cooking oil, the inflation rate, and food inflation.

Table 1. Data Centralization Measures

Variable	Average	Standard Deviation	Minimum Value	Maximum Value
Demand for Packaged Cooking Oil	17,601	2,505	13,496	24,807
Packaged Cooking Oil Prices	17,475	2,372	7,957	26,240
Inflation	3.15	1,403	1.33	5.95
Food Inflation	0.34	1.04	-2.35	2.10

According to Table 1, the mean demand for packaged cooking oil is 17,601 tons at a price of Rp 17,475. The minimum demand for packaged cooking oil is 13,496 tons, while the maximum demand is 26,240 tons, with a standard deviation of 2,505 tons. The minimum price for packaged cooking oil is Rp 7,957 per liter, while the maximum is Rp 26,240, with a standard deviation of 2,372.

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Data Processing Analysis

The hypothesis and data analysis indicate a substantial disparity in the price of packaged cooking oil prior to the implementation of an 11% VAT rate (March 2021-March 2022) compared to the price following the imposition of the 11% VAT rate (April 2022-July 2024). The implementation of an 11% VAT rate substantially affects the price of packaged cooking oil. The P Value of 0.0010 indicates significance, as it is less than 0.05 (Mann Whitney).

Moreover, VAT influences overall inflation and food inflation with values of 0.5546 and 0.4057, respectively. A p-value below 0.05 in both connections signifies statistical significance (Mann Whitney), hence reinforcing the conclusion that VAT exerts an additional influence on consumer price circumstances.

The SEM analysis results indicate that the increase in the price of packaged cooking oil significantly impacts general inflation and food inflation, as evidenced by p-values below 0.05. The elevation of VAT rates to 11% will result in a price rise of 2415 for cooking oil (path coefficient). The elevation of the VAT rate to 11% results in an inflation increase of 0.0002; conversely, the absence of this VAT increase would lead to a deflation of 0.8859. The elevation of the VAT rates to 11% results in a food inflation increase of 0.0002; conversely, the absence of this VAT rate increase would lead to a deflation of 2.6123, as illustrated in Table 2, which presents the processed data about the imposition of the 11% VAT rates.

Table 2. Results of Data Processing on the Imposition of 11% VAT Rate

Variable	*Path Coefficient*	*Intercept*	*T statistics (|O/STDEV|)*	*P values*
Dummy VAT -> price of packaged cooking oil	2,415.8434	15,950.6923	3.2994	0.0010
Dummy VAT -> inflation	0.5546		2.2181	0.0266
Dummy VAT -> food inflation	0.4057		2.6002	0.0093
price of packaged cooking oil -> inflation	0.0002	-0.8859	2.7924	0.0053
price of packaged cooking oil -> food inflation	0.0002	-2.6123	3.4096	0.0007

Prior to the implementation of the 11% VAT rate, the average price of packed cooking oil was Rp15,950 per liter. Following the imposition of the VAT, the average price rose to Rp18,350 per liter, reflecting an increase of 15.05%. The elevation of VAT from 10% to 11% (an increment of 1%) substantially impacted the price escalation of packaged cooking oil by 15.05% (Figure 4).

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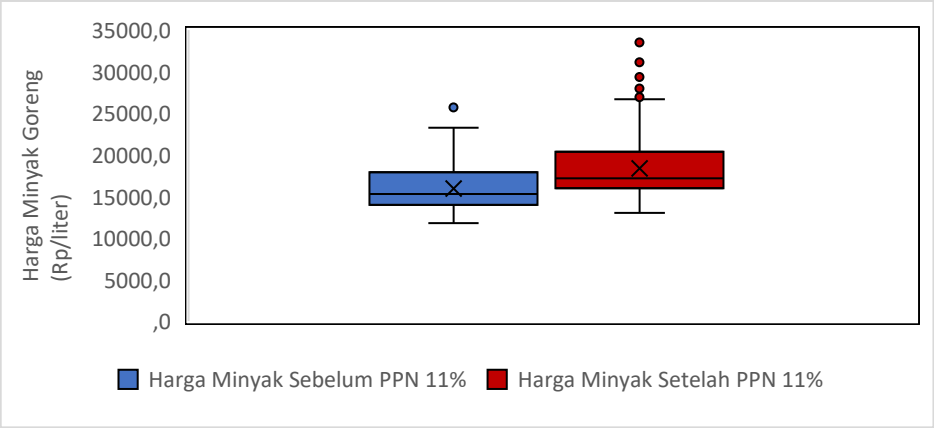

Figure 4. Difference in Price of Packaged Cooking Oil Before and After the Imposition of 11% VAT Rate

According to Figure 4, the average price of packed cooking oil (Rp/liter) prior to the implementation of the 11% VAT rate was approximately Rp15,951, however subsequent to the application of the 11% VAT rate, it rose to Rp18,367. Prior to the implementation of the 11% VAT rate, the minimum and maximum prices of packaged cooking oil (Rp/liter) were Rp11,773 and Rp25,712, respectively. Following the imposition of the 11% VAT rate, the minimum and maximum prices of packaged cooking oil (Rp/liter) increased to Rp13,000 and Rp33,510, respectively.

The introduction of the 11% VAT rate on packaged cooking oil significantly impacts the price of cooking oil, as well as general and food inflation, despite a minimal coefficient value of 0.0002. The significance is evident from the low p-values of 0.0053 and 0.0007, along with the T statistics that indicate the intensity of the link (Table 2).

Results

Analysis of the Impact of the 11% VAT Rate Increase on the Price of Packaged Cooking Oil

Taxation is the primary revenue source for the state to manage the economy. In 2023, taxes contributed IDR 2,118.34 trillion, accounting for 80.32% of total governmental revenues. VAT constitutes a component of the state's tax income streams, contributing to overall tax collections. In 2023, VAT has provided IDR 737.65 trillion, accounting for 35%. To augment state earnings from VAT, the government raised the VAT rate from 10% to 11% in April 2022.

Packaged cooking oil is among the commodities affected by an increase in VAT rates. The rise in VAT rates affects the price consumers must pay, as producers will pass the VAT onto them [23]. Firgo's research indicates that an 11% rise in VAT substantially affects the price of cooking oil [24]. The average price of packed cooking oil prior to the 11% VAT was IDR 15,950 per liter, however post-VAT, the average price rose to IDR 18,350 per liter, reflecting an increase of IDR 2,400 or 15.05% per liter [25]. The elevation of VAT from 10% to 11% (an increment of 1%) substantially influenced the rise in the price of packaged cooking

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oil by IDR 2,400 or 15.05% per liter [26]. The 11% VAT rise is mandated under Article 7, Paragraph (1), letter an of Law Number 7 of 2021 about the Harmonization of Tax Regulations (Law on HPP). The 11% VAT hike is not final, as it will rise to 12% on January 1, 2025, in accordance with Article 7 Paragraph (1) letter b of the HPP Law.

The rise in VAT from 11% to 12% will undoubtedly affect the price of cooking oil. The anticipated price of cooking oil on January 1, 2025, is projected to rise to IDR 20,121 per liter, within a range of IDR 19,720 to IDR 22,732 per liter. Given that the price of cooking oil on September 29, 2024, is IDR 18,040 per liter, the anticipated increase in price on January 1, 2025, is IDR 20,836.2 per liter.

Analysis of the Impact of Cooking Oil Prices on Inflation and Food Inflation

The rise in packaged cooking oil prices resulting from the introduction of an 11% VAT has substantially affected overall inflation and food inflation [27]. The most significant influence on inflation arises from cooking oil, a product essential for all individuals [28]. Cooking oil is a product required not only by individual consumers but also by the consumer population at large. Consumers, as workers purchasing food, would indirectly influence the rise in cooking oil prices, which in turn will elevate food prices from sellers. Consequently, the escalation in cooking oil prices significantly affects overall inflation [29]. Consequently, the rise in cooking oil prices affects the food business that utilizes cooking oil in its production processes. The cost of cooking oil significantly influences the sales dynamics of food vendors, as it is the primary ingredient in meal preparation [15].

In 2023, the per capita weekly consumption of packaged cooking oil by the Indonesian population, as reported by BPS, averages 0.343 liters annually. Assuming each household comprises four family members, each month consists of four weeks, and the price is IDR 20,121, the monthly requirement for cooking oil amounts to 5,488 liters, equating to IDR 110,424. Consequently, the head of the family must designate an additional monthly budget of IDR 110,424 for cooking oil requirements starting January 1, 2025.

This analysis indicates that cooking oil affects not only its particular market but also contributes to food sector inflation and overall inflation [30]. Consequently, alterations in the price of cooking oil resulting from fiscal policies like VAT must be thoroughly included into national economic policy formulation.

CONCLUSION

This analysis indicates that an 11% rise in VAT rates on packaged cooking oil can impact the economy by raising cooking oil prices, as well as contributing to overall inflation and food inflation. Value Added Tax (VAT) is levied on all stages of production and distribution. Consequently, VAT is applied in economic transactions, resulting in the ultimate consumer or buyer bearing the tax cost. The rise in production and economic interactions can augment VAT revenues. The implementation of VAT on a commodity can influence both its demand and supply, particularly the demand. The tax levied on a commodity constitutes an economic cost of production, hence potentially elevating its price. An increase in the price of an item may diminish demand, since it becomes more costly for consumers. Cooking oil is one of the

items subject to VAT. Cooking oil is a fundamental necessity for the Indonesian populace, derived from palm oil products, specifically Crude Palm Oil (CPO). Cooking oil commodities are essential necessities for the Indonesian populace. Cooking oil has a crucial function in sustaining economic stability in Indonesia. Cooking oil is among the items affected by a rise in VAT rates. The rise in VAT rates affects the prices consumers must pay, as producers will pass the VAT onto consumers. The investigation revealed a large disparity between the price of cooking oil prior to the 11% VAT rate, which was 10% during the March 2021 to March 2022 period, and the price of cooking oil subsequent to the 11% VAT rate from April 2022 to July 2024. The analytical results indicate that the 11% VAT rise substantially affects the price of cooking oil. The average price of cooking oil prior to the 11% VAT was IDR 15,950 per liter, however post-VAT, the average price rose to IDR 18,350 per liter, reflecting an increase of IDR 2,400 or 15.05% per liter. The rise in VAT will influence inflation, resulting in an increase of 0.0002. Conversely, without a VAT increase, deflation will occur at a rate of 0.8859, alongside a food inflation increase of 0.0002. In the absence of a VAT increase, deflation could reach 2.6123. The rise in cooking oil prices resulting from the imposition of an 11% VAT has substantially affected overall inflation and food inflation. The greatest influence on inflation overall is attributed to cooking oil, a product essential for all individuals. Cooking oil is a product required not only by individual customers but by consumers collectively. It can be inferred that the VAT price significantly and positively influences the price of cooking oil, whereas the price of oil significantly and positively affects general inflation and food inflation. Taxation laws regarding rates must take into account the nature of the commodity. Cooking oil is a widely consumed item; hence, fluctuations in its price may influence the decision to raise VAT rates..

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