REVOCATION OF VAT EXEMPTION FOR ELECTRICITY AND WATER AND ITS IMPACT ANALYSIS

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ABSTRACT

Covid-19 pandemic has brought an impact on global economy which turn down the ranked of Indonesia from a country with upper middle income to lower middle income. In response to this matter, the Indonesian government has been issued several policies to increase the acceleration in economic and support economic recovery in order to optimize the state revenues which can be done by revoking of VAT exemptions on electricity and water. This research aims to explore further regarding the effect of poverty and inequality which arise from this revoking policy. The analysis conducted by microsimulation model method to measure poverty and inequality based on individual/household gains or losses caused by taxes policy. Main data obtained from national socio-economic survey data which submitted by BPS. Broadly speaking, these simulation results are indicates that this policy had slightly increases poverty rate, but did not affect on inequality. Through this research it was found an alternative way to compensate with assumption that this costs are source of additional revenue obtained from this imposition of normal VAT rates on electricity and water for households, so its distribution through cash transfers could be an effective way to fixes the poverty levels and inequality.

Keywords: *VAT, Microsimulation, Retribution, Poverty, Inequality..*

A. INTRODUCTION

Covid-19 pandemic has affected to the global economy which changed Indonesia's status from upper middle income to lower middle income. The pandemic also had limited the Indonesia's achievements in decreasing the poverty rate, from record low of 9.2 percent in September 2019 to 10.4 percent in March 2021 (World Bank, 2022). In reaction to this, the Indonesian government has issued various policies in an efforts to increase growth and support the acceleration of economic recovery as well as maximizes the state revenues from the taxation. Indonesia had issued the *Undang-undang No. 7 Tahun 2021* concerning Harmonization of Tax Regulations. One type of tax which undergone several policy changes is VAT, this policy refocuses on exceptions and VAT facilities to broaden the tax base but considers the principles of fairness, benefits

for public welfare and national interests (BKF, 2021).

One of points from this policy is revocation of the VAT exemption on electricity and water. Beside that, the government also subsidizes the price of electricity paid by customers so the price would be varies to each tariff class (Resosudarmo, 2021). Quoted from the Central Government Financial Report (LKPP) the amount of electricity subsidies in 2019 is IDR 52 trillion or a quarter of the total subsidy which realized in that year (LKPP, 2022). As far as we know that electricity and water are commodities that inseparable from every household, both low and high income. The Central Statistics Agency (BPS) marked that until 2019 around 97% of households in Indonesia were electricity customers, as well as in the industrial sector where electricity and water contributed as main inputs to every industrial sector as reflected in the input output table for the Indonesian economy. Therefore, it stated that if this policy will brings huge impact to the society.

Indonesia's VAT performance over past 10 years has tended to decline, according to the data sourced from Indonesia's Economic and Financial Statistics, BI and the DGT's annual report it says that the lowest VAT performance was occurred in 2020 with VAT revenue ratio of 0.45 with C-efficiency ratio of 42.75 percent meaning that there is a potential loss of VAT revenue of more than 50 percent, the imposition of 0% rate or not being charged/exempt which caused the VAT C-efficiency ratio below 100% (Sulfan, 2021). This implies that Indonesia needs to make an adjustments to the VAT system, this VAT policy change is in line with one of the recommendations in a review conducted by James Alm (2019) such as for Indonesia to expand the VAT tax base by maintaining lower VAT threshold, reducing the exemptions and expanding VAT for products that are not currently taxed, including services that are not taxed.

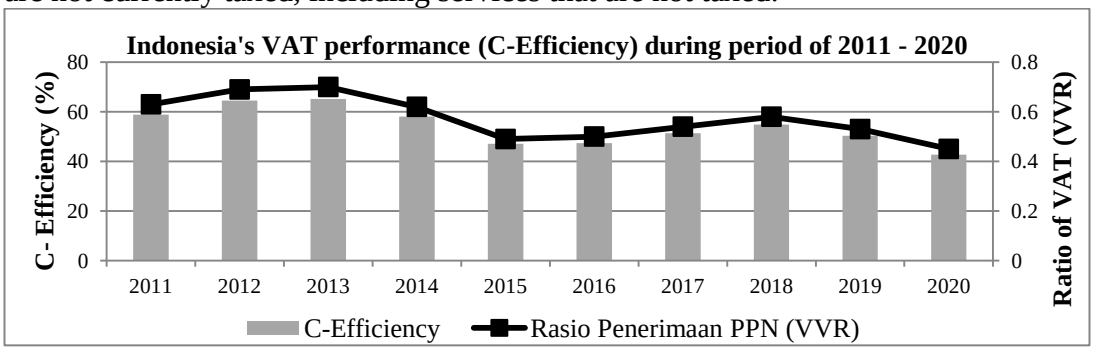


Figure 1. Presents the performance of Indonesian VAT (Source: Sulfan, 2021).

In accordance with the 2019 fiscal policy agency report, the value of tax spending due to VAT exemptions on electricity and water which is among the largest compared to other VAT exemptions. As In total, both of them contributed IDR 14.05 trillion (IDR 13.47 trillion for electricity and IDR 577 billion for water) or more than 50 percent of total tax spending due to VAT exemption, so if it is calculated then it will have significant impact on increasing state revenues and reducing the potential loss from VAT (Badan Kebijakan Fiskal, 2021). According to these data, it is known that the amount of tax spending on VAT exemption on water is not very significant, but in practice the VAT policies on

electricity and water are always juxtaposed both when the VAT exemption and when the VAT exemption facility is revoked, thus encouraging us to include water commodities for our evaluation.

If this connect to the Indonesian government's commitment to continue to reduce emissions in terms of net zero emission contributions in 2060, then this policy of revoking VAT exemptions on electricity is in line with imposing carbon tax policy which also dates on April 2022, both of these policy are the efforts from the government to reduce emissions in the energy sector. BPS noted that currently the most power plants in Indonesia are Steam Power Plants (PLTU) which use coal as the main component. The implementation of carbon taxes to control emissions from the producer side, while VAT policies can contribute to reduce the emissions from the consumer side.

In addition to that, the reason behind the granting VAT facilities on electricity and water as referred to the *Undang-undang PPN No. 42 Tahun 2009*, namely to ensure the availability of electricity and clean water which highly needed by the society and also considered to have been achieved. This could be view by the BPS report which shows an increase in the number of electricity and water customers. The household group's electricity customers increased from 37.1 million in 2009 or around 63% of the total households to 68.7 million households in 2019 or around 97% of the total households. While for clean water customers (households, industry and other consumers) were recorded in 2012 as many as 9.8 million customers and in 2018 there were 14.1 million customers.

In recent decades, many have argued that VAT is an ideal solution for countries with limited administrative capacity seeking to increase tax revenues and minimize economic distortions (Amlani, 2019). VAT is relatively safe from evasion in the domestic market and has been viewed as adequate and secure of tax because those revenue are collected throughout the production chain, unlike retail sales tax where all taxes are lost if there is avoidance at the final stage (Charlet & Owens, 2013). One of features of VAT which attractive is its revenue productivity which generates sufficient revenue compared to the rates (Toye, 2000), and relatively easy to administer (Gerard & Naritomi, 2018). However, VAT has been criticized for being regressive in those who have lower incomes pay greater percentage of their income for the consumption of goods and services than those with higher incomes. However, several studies found that VAT is slightly progressive. Based on Thomas (2022) this progressivity driven by reduced rates and exemptions.

The changes in VAT policy have brought an impact to the poverty and inequality. Through the microsimulation model method which previously conducted by Amlani (2019), Gcabo et al. (2019), and Warwick et al. (2022) found the connection relates to the increase in government revenue which resulting from tax reform can be redistributed to targeting lower income groups in the form of social spending. They simulate tax changes and the best compensation (social spending) policy options which designed to address the poverty and inequality impacts of these policies, especially for relatively poorer groups.

Based on explanations from previous research which connected to the impact of VAT policies which measures by microsimulation model method, it is

confirmed that most of it was revealed the effects of tax policy in general and the others only copes with the impact of VAT policies on certain commodities. By considering since 2009 the electricity and water are commodities that are exempt from VAT by the government with the issuance of *Undang-undang No. 7 Tahun 2021* which stated that those commodities are subject to tax, so it is very important to learn about the impact of this policy change and discovered whether the policies set by the government are pro to poor or not because electricity and water are the commodities used by almost all individuals. This research contributes to provided the results of an analysis of the impact from implementing the policy of VAT exemptions on electricity and water in Indonesia through microsimulation model approach including alternative redistribution policies in overcoming poverty and emerging inequality.

B. LITERATURE REVIEW

Literature Study

VAT is a tax on consumption and abbreviation from "Value Added Tax" which has the essence that this tax would charged in every stage of production but with provisions that allow entrepreneurs to offset the tax they have paid on the purchase of input goods/services against the tax that they charge on the sale of goods and services as output (Ebrill et al., 2001). When it is compared to other types of indirect taxes, such as sales tax, the VAT system has the advantage in avoiding the cascading effect, meaning the same commodity would be only taxed once (Tanzi & Zee, 2000). VAT has been criticized for its regressive act to those who have lower incomes will require to pay greater percentage of their income for the consumption of goods and services than those with higher incomes. However, several research have been found that VAT is slightly progressive because it is driven by reduced rates and exemptions (Thomas, 2022).

The VAT exemption generally applied in agricultural, education, health, transportation and financial services sectors, but in reality, the implementation of VAT exemption may varies between countries (Ebrill et al., 2001). Apart from equity reasons, these exemptions would try to fixing the distributional consequences of taxes, both through the price which facing by consumer and the effect on income. According to Keen (2014), an eternal problem in VAT design is the question of whether the applicable rates should be the same for all goods and services or should be vary, through differentiating VAT rates for equity reasons would be less good way to deal with distribution problems compared to other instruments. A good taxation system must be balance between the need to increase income efficiently, without unnecessarily distorting economic activity and redistributing income according to values of citizens (Gcabo et al., 2019).

Previous research towards impact of poverty and inequality on VAT policy that were carried out by microsimulation model approach were mostly conducted to study relates to effects of policy in general, not to the impact of tax policy on certain commodities. For instance, Warwick et al. (2022) in his research on 6 LMIC countries which found the Preferential VAT policy are bad way in distributing resources to poor households and the cash assistance scheme was more targeted to poor families if the VAT base was expanded, and it is in line

with Amlani's findings (2019) regarding the elimination of Preferential VAT in Tunisia and Gcabo et al. (2019) who highlighted the increases of VAT rate in South Africa Or a research which studied on the impact of VAT in general as it shown by Jellema et al. (2017) regarding the influence of VAT system on poverty and inequality in Indonesia.

Meanwhile, those research relates to studying tax policies on certain commodities tends to focus on the policies of a country with different VAT system. Mentioned one from Maskaeva et al. (2019) through microsimulation model for Tazmania (TAZMOD) found that an increase in indirect taxes on non-staple goods such as,alcohol and tobacco products, did not directly impact to the distribution of household income even without allocation to the social sector, only impacting the consumption. Those are similarly to Cirillo et al. (2021) research through microsimulation model for Italy VATSIM-DF(II) who discover that a reduction in the VAT rate of 7% for basic goods/services and baby diapers did not have an impact to overall household tax burden. There are variations in dstributional impact of the VAT policy due to numerous different factors including the VAT structure, poverty levels and inequality levels of country (Warwick et al., 2022). Those who less rely on VAT usually use income tax extensively, another difference coming from heterogeneity of VAT rate structure which is significant.

From the electricity view, previous research has focused on subsidy policies (Resosudarmo, 2021; Younger et al., 2016), they were tried to simulated the impact of electricity subsidy policies in certain countries and did not found any research that studies about the impact of distribution on the VAT electricity policy which has resulted of VAT-free facilities. So this research would be centered on studying the distribution effect of VAT policy, namely the revocation of VAT-free for electricity and water facilities and they were also simulate about alternatives policy (cash transfers) as compensation option for comparison.

VAT System in Indonesia

In the context of Indonesia, taxes are one of the main instruments of fiscal policy due to its contribution to the state revenues as reflected in the state budget (Tingkes & Widnyani, 2021). Fiscal policy has strategic functions which is allocation, distribution and stability functions. Changes in fiscal policy aim to change of source of revenue from taxpayers, this income used to change the government's ability to fund economic growth and welfare programs. If state revenue from the tax sector is high, then the government can allocate this fund to strategic programs. With the right allocation, fiscal policy could be able to support the achievement of target set namely increasing the welfare and encouraging the economic growth.

Based on its character, taxes are divided into two categories, namely direct taxes and indirect taxes. Direct taxes are imposed on a person's income while indirect taxes are imposed on consumers for the purchase of goods and services. One type of indirect tax that has been applied in more than 120 countries is Value Added Tax (VAT) (Keen & Lockwood, 2010). Quoted from Ebrill et al. (2001), VAT concept was first introduced by Dr. Wilhelm von Siemens in the 1920s, then the concept was adopted and developed by the French Tax Authority in 1954..

Indonesia is one of countries which adopted VAT system, this VAT system is regulated in *Undang-undang No. 8 Tahun 1983* concerning Value Added Tax on Goods and Services and Sales Tax on Luxury Goods. This law has been amended several times, which is on 1994, 2000, 2009 and last on 2021. VAT law in principle stipulates that every consumption of goods and services within the customs area (land, sea, air of Indonesia) are subject to VAT with single rate.

Indonesia embraces to the destination principle system, by means that VAT is imposed based on the place where goods and services are consumed, not based on where the goods and services are produced. With this VAT principle it will only imposed if goods and services are consumed domestically so for export goods would be 0 percent tariff that will be imposed, while for imports the standard rate that will apply before 2022 is 10 percent.

Due to certain reasons before 2022 there are several types of goods and services which are not subject to VAT (tax exemption), this regulated in detail on the Article 4A of the VAT Law. As for goods that are not subject to VAT, such as: (1) mining goods or drilling products taken directly from the source, (2) basic necessities that urgently needed by many people, (3) money, gold bullion, securities and (4) food/drink served in hotels, restaurants, food stalls and so on. While the types of services that are not subject to VAT are (1) religious services (2) medical health services (3) social services (4) educational services (5) financial and insurance services (6) money transfer services using postal money orders (7) service for sending letters with postage(8) public telephone services using coins (9) non-advertising broadcasting services (10) parking space provision services (11) labor services (12) hotel services (13) catering services (14) arts and entertainment services (15) public land and water transportation services, as well as domestic air transportation services which are an integral part of foreign air transportation services and (16) services provided by the government in order to run the government in general.

The mechanism for collecting VAT in Indonesia by the use of invoice method whereas taxes are imposed on every stage of production and distribution, in this system the terms of output and input tax are known. Production process, with this mechanism stated that the amount of VAT which should be deposited to the government are the difference between output tax and input tax, in other words entrepreneurs are only charged for added value. By this mechanism, VAT will not create a cascading effect.

Entrepreneurs who required to collect VAT are those are with PKP status (taxable entrepreneurs), this status owned by entrepreneurs who have a business circulation for more than IDR 4.8 billion a year, however, entrepreneurs who have business circulation less than that would have no choice to become as one.

For certain purposes , some goods and services receive facilities and also different treatment, those facilities are uncollected and exemption of VAT, these concept are not subject to limited VAT, as in line with VAT Law of Article 16B which stated that “uncollected” facility, those input tax on the acquisition of goods and services are used to produce goods and services which can be credited, the same goes to the mechanism for collecting VAT on goods and services with standard rate. Whereas in the statement of “free” facility, the input tax on

acquisition of goods and services used to produce goods and services which cannot be credited.

Electricity and water before 2022 are included in the group of goods that receive VAT exemption facilities, where's VAT will not subject to electricity except for households with kWh meters above 6600VA, while as for water, it is not subject to VAT to both clean water is not ready or ready for drinking as it is stipulated in the *Peraturan Pemerintah No. PP-40/2015* and *Peraturan Pemerintah No. PP-81/2015*. The provision of VAT-free facilities for these two commodities is the government's effort to ensure the availability of electricity and clean water which are really needed by the society.

In 2021 through the *Undang-undang No. 7 Tahun 2021* the Indonesian government changed several VAT system policies which took effect in March 2022, these changes are regulate several points such as reducing tax objects and facilities, increasing rates, convenience and simplicity and input tax credit. This research only centered on part of the point of change, namely the reduction of tax objects and facilities. More detailed, it just only centered on revocation of VAT exemption for electricity and water consumption from previously being exempt then have to charged at the normal rate of 10 percent.

This policy is in line with recommendations on reviews based on Indonesian tax system that have been carried out previously, which stated that VAT revenues in Indonesia are insufficient compared to other countries, namely less than 4% of GDP, where one of the reasons behind that is the enormous of VAT exemptions, so that it is recommended to expand the tax base of VAT by maintaining lower VAT threshold, reducing exemptions, and expanding VAT for products that are not currently subject to tax including services that are not subject to tax (Alm, 2019).

Electricity Subsidies in Indonesia

Milton H. Spencer and Orley M on their book entitled Contemporary Economy suggests that subsidies are payments which by the government for household or business entity intended to achieve goals (Spencer & Amos, 1954). In real life, the Indonesian government provides subsidies for both directly and indirectly to the public in various sectors as recorded in the Central Government Financial Report (LKPP), including: diesel oil, LPG, electricity, fertilizer, PPH-DTP, credit interest and others with total subsidy that have been issued by the government reached Rp. 196.2 trillion rupiah for 2020, particularly those subsidized for electricity which borne by government was IDR 49 trillion or around 25 percent from the total subsidy and electricity was the largest sector that received subsidies (LKPP, 2022).

The provision of electricity subsidies refers to Law No. 30 of 2009 concerning Electricity which mandates that the central government and regional governments provide funds for disadvantaged groups of people. The electricity subsidy are given indirectly so the price received by consumers are lower than the market price. Fiscal Policy Agency explained that in its implementation of electricity subsidy policy has undergone adjustments for several times. In 2014 the electricity subsidy policy which conducted only in the form of policy to increase or decrease electricity rates, such as the policy to increase electricity rates

by 10% in 2010 and by 15% in 2013, so all the consumers of PLN (State Electricity Company) had received electricity subsidies in this period.

During 2015, the government removed electricity subsidies for 12 types of consumers which consisting of household with power of 1300 VA and above, large industrial consumers (200 VA and above), large business customers (6600 VA and above) as we'll as from the government side as customers (6600 VA and above). Furthermore, in 2017 the government again amended its subsidy policy, which stated that this subsidies were only given to 450VA and 900VA households, only 900VA customers that were registered and Integrated Social Welfare Data (DTKS).

In 2020, Indonesia will provide additional subsidies in the context of handling the Covid-19 effect, subsidies for exemption electricity tariffs for customers with 450 VA kWh meters and 50 percent discount on tariffs for customers with subsidized 900VA kWh meters with aim to maintain the purchasing power for the poor. And based on LKPP statement, that there is no subsidy for clean water from The Central Government.

C. METHOD

Research Model

This analysis was performed by microsimulation model method. Microsimulation models are often used to measure the poverty and inequality based on individual/household gains or losses due to tax policy (Warwick et al., 2022). Microsimulation modeling first introduced by Orcutt (1957) then widely applied in Economics (Ballas et al., 1999). Microsimulation could be defined as methodology related to the creation of large-scale micro dataset populations through impact analysis of policies on micro level with intention to learn about the changes in individuals lives within households and analyze the influence of changes in government policies for each individual and each household (Ballas et al., 2005).

We use microsimulation model following the framework which developed by Commitment to Equity (CEQ) which explains in detail by Lustig (2018). The CEQ assessment uses simulation of fiscal incident analysis to reveal the impact of policy in a country's level of poverty and inequality by micro-level data. Fiscal incident analysis consists of appropriating taxes (direct and indirect taxes) and public spending (social spending and consumption subsidies) to households so as to compare pre and post tax income and transfers. Basic incident analysis in CEQ is a static, which did not take into account about behavioral effects and general balance effects, in other words these analysis are only considers first order effects which known as partial balance analysis.

The assumption Is the elasticity of demand and supply for labor is zero, meaning that it does not take into account aspects of price changes at advanced levels which can affect poverty and inequality levels as in other more sophisticated microsimulation models. Therefore, the calculation of the VAT burden in the model is the upper limit of the actual effect income because if the VAT exemption is repealed, the real income of households will be lower, which is likely to cause them to reduce their overall spending.

The CEQ assessment are build from the construction of concept of income which consists of market income, net market income, disposable income, consumable income and final income. Market Income, pre-fiscal income before any government intervention (tax-transfer) which is the cumulative household income consisting of income from all forms of employment, capital income and personal transfers. Net Market income obtained from Market Income minus direct tax value. Disposable Income obtained from Net Market Income added to the monetary value of the government transfer program. Consumable income or Post Fiscal Income are obtained from Disposable Income plus indirect subsidies and minus indirect taxes. Finally Final Income is Consumable Income plus transfers of health and education goods.

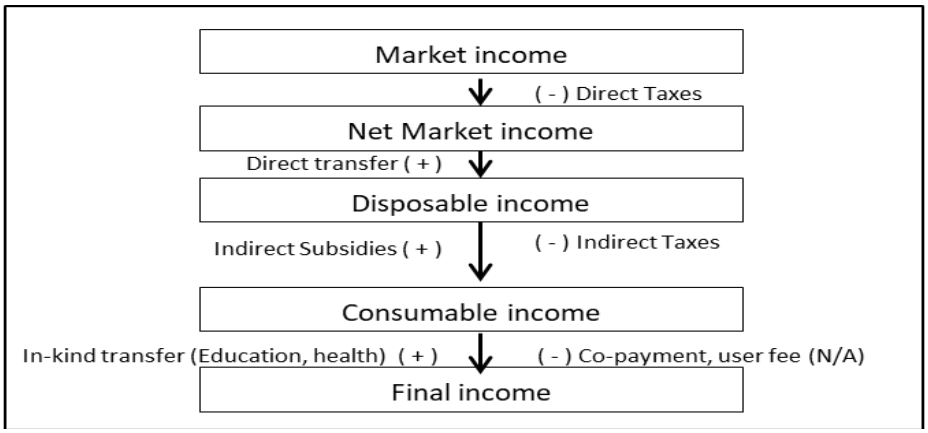


Figure 2. Illustrates the Construction of Revenue Plan (CEQ) (Source: Lustig, 2018)

The focuses of this analysis results are estimates the distributional effects of taxes and social transfers/assistance programs as well as its impact on poverty and inequality for pre-fiscal income concept and post-fiscal income concept, respectively. The welfare indicator that used in this analysis is Per Capita Income. In this study the concept of income is only defined as consumable income considering the research objective is the impact of VAT (indirect tax) policies.

Data

The main data used is national socio-economic survey data (SUSENAS) from BPS which contain of Core data and household consumption/spending module data during March 2019, which consists of data on household such as consumption budget, cash assistance and the use of education and health services that collected from around 315,000 households throughout all provinces in Indonesia for period of over 12 month.

The second data used Is the 2016 input-output table to calculate VAT tax burden, the input-output table contains information on transactions of goods and services that used in production activities, the final demand for supply components and gross added value, which provides an overview of the interrelationships between units activity (sectors) in economy sector of Indonesia as a whole.

Other data used are government administration data that related to institutions, such as APBN data, PLN statistical reports and poverty lines, these data used as benchmarks or alternative data to estimate the proportion of proxy values in micro simulation model. Beside those date, this research also provide the data from other related studies if those alternative data are unavailable.

Microsimulation Models

Because the "SUSENAS" data did not include with individual or household income data, then we define the concept of income through per-capita spend budget method. Per Capita income is define through disposable income is monthly income, then market income is total of per capita spend after decrease with value of direct cash transfers (in this study are Family Hope Program (PKH), Smart Indonesia Program (PIP) and Non-Cash Food Assistance) plus with direct tax burden (Individual Income Tax). And Finally, consumable income, which come from disposable income plus the benefits of indirect subsidies (LPG, kerosene, diesel and electricity) and minus to indirect tax burden (VAT).

As it's explained earlier, the incident analysis consists of allocating taxes and transfers to households so that it can compare between income pre and after taxes as well as transfers. The counterfactual microsimulation model was developed by calculate the amount of tax burden and the value of benefits of each social transfer/assistance program, then calculate the new level of income at individual level after adding the value of transfer benefits and/or subtracting the value of the tax burden.

1) Direct Transfer Modeling

   For direct transfers, the model was developed to recognize several government expenditure programs, such as Family hope program, Smart Indonesia Program and Non-Cash Food Assistance. Because those Susenas's data did not complete with transfer value of each program, so this research are identify these benefit value of each program through indirect identification method which means that use the administrative data to estimate the value of benefits received by individuals, while the transfer program recipients are determined based on indicators in the Susenas data by referring to regulations in 2019 (according to the year of micro data) concerning individual criteria and the value of benefits that receive through those program.

   We validated the value of the benefits obtained by comparing to previous research in the context of direct transfers validation which was performed by LPEM University of Indonesia, for details data are attached in this research.

2) Personal Income Tax Modeling

   Personal income tax assumed that this tax is borne entirely by the income recipient. Personal income tax in Indonesia is levied on gross income from all sources minus withholding (PTKP and other deductions such as employee's pension costs). Personal income tax expense could be identified through direct method which available in Susenas, namely the other tax column (tickets, income tax, etc.).

   We found that the value of personal income tax by average individual are relatively low and did not significantly affect to market income and this also

in line with previous research by (Jellema et al., 2017).

3) Subsidy Modeling

The subsidies are calculated from several models such as LPG subsidies, kerosene subsidies, diesel subsidies and electricity subsidies. These four subsidies are the largest among other various subsidies which provided by the government (total more than 60% of the subsidy budget) and mostly related to household consumption. Indirect subsidies have the impact on consumer prices are lower than market prices because part of good price is paid by the government. The value of benefits received by individuals is calculated by the principle which is the similar way as its described in the section of direct transfers. The value of subsidy for the price of goods received by consumers are refers to the subsidy policy in 2019, the value of the benefits received by households for each type of subsidy can be seen through the attachment detailed here.

Subsidies for electricity are given to the type of R-1 households with 450VA, 900VA-poor and 900VA-capable kWh meters, each value would be IDR 1,108.58/kWh, IDR 957.12/kWh and IDR 162.57/kWh. Because the Susenas data did not contain the data from kWh meter used by households, the identification of kWh meter uses a proxy for the average household electricity consumption in a month. The proportion of the number of customers per tariff in the PLN statistical report as well as previous research data is used as an indicator to determine the type of household kWh meter, the details are attached here.

4) Value Added Tax (VAT) Modeling

The burden of Value Added Tax in the model is assumed fully borne by consumers in the form of higher prices, this assumption is entirely incorrect if the market is not competitive but the extent to which market structure influences tax on consumers is not clearly known. This assumption is in line with the results from previous studies who found that consumers bear the majority of tax burden in tax incidence (Benzarti et al., 2020; Carbonnier, 2007; Gaarder, 2019).

The Calculation of VAT tax burden through Cost-Push model which adopted by Warwick et al. (2022)) that uses an input-output table which developed by Ahmad & Stern (1984). This model could be adding to the Indonesian VAT system because the variables in the model can accommodate the VAT system in Indonesia, such as the mandatory of PKP threshold where there is a limit for entrepreneurs who are required to collect PKP, there are exceptions and VAT which obtained by calculating the added value or gap between output tax and input tax.

Output obtained from the cost push model is the effectiveness of tax rate towards household consumption. Basically, even though that consumer goods are included in the VAT exemption object, but there is still tax burden in consumer purchase prices. This because producers, especially those within the country, are also subject to the VAT on their production input goods, but in the case of input goods that are exempt from VAT (exempted), producers cannot claim back as tax credit which lead to tax burden would be borne by

consumers through higher prices.

The assumption Is that the proportion of inputs used are fixed and substitution elasticity between inputs is zero (leontive production technology). This model consider the difference in tax rates of consumption goods which originating from imports, where for imports the effective tariff that applies is the statutory tariff or based on applicable regulations this certainly occurred due to imported products are not directly affected by VAT of production input.

$$TX = (1-\alpha)tX + T\Gamma^{D}X - (1-\alpha)\left(E \circ t\Gamma^{D}\right)X + t\Gamma^{F}X - \left(E \circ t\Gamma^{F}\right)X \quad \text{.....(1)}$$

Whereas the vector of 1 x N effective VAT rates, diagonal matrix N x N domestic output, t vector of 1 x N statutory rates for each sector, I^{D} and I^{F} are matrix of N x N technical coefficients for domestic inputs and imports for each sector, E vector 1 x N credit status, use value of 0 if it cannot be credited and use value of 1 for others, ° = Hadamard product.

$$T = [(1-\alpha)t - ((1-\alpha)\,E \circ \left(t\Gamma^{D}\right)) + t\Gamma^{F} - \left(E \circ (t\Gamma^{F})\right)](I_N - \Gamma^{D})^{-1} \quad \text{.....(2)}$$

Besides considering the imported products, another thing that need to recognized in the model is Not all consumption products are originated from companies which collect the VAT, such as, if the company is quite small which has income below the PKP (Taxable Entrepreneur) limit, beside that, there is also tax evasion, in order to identify these proportions, we use economic census data as a proxy which describes the proportion of companies that collect VAT in each sector. The proportion of tax collected by the companies could be defined as the percentage of large companies to total companies. So the effective VAT rate borne by the consumer is:

$$\tau = (1_N - \beta) \circ T + \beta \circ t \quad \text{..... (3)}$$

Where's the effective tariff borne by the consumer is the weighted average of the effective tariff vector on domestically produced output (T), the statutory tariff of imported goods (t) and share of products obtained from imports (β), which 1_N is a vector of N line 1.

We obtain the effective VAT rate vector through the input output table for the last period, namely 2016. We define each sector in the input output table whether VAT is subject to normal or exempt rates (E) based on the provisions which applied in 2019. Meanwhile, statutory rates that what we use is 10 percent.

The proportion of entrepreneurs who collect VAT uses a proxy from economic census data (BPS), then the number of small companies reflects as companies which are not qualified as PKP, while large companies are companies which are qualified as PKP. For the proportion of imported products is total transaction of input output table minus domestic transactions. We estimate the calculation of effective rate through matrix operations by Stata application. Furthermore, the effective rate that we obtain is multiplied

by household spend for each SUSENAS (National Socioeconomic Survey) consumption, which mirroring by the VAT burden borne by each item of household consumption.

The effective of VAT rates that we obtain range from 0.21 percent to 5.59 percent for sectors that are excluded from VAT (exempted) and between 5.4 percent to 10.39 percent for sectors which subject to normal rate (10%). For the effective of VAT rate on electricity obtained for 3.41 percent and water by 1.44 percent.

Furthermore, the aggregate which impact to the changes in income levels could be traced by the changes in poverty and inequality levels, in order to measure poverty and inequality levels, the basis used are per capita expenditure, the poverty indicator through the headcount ratio or the percentage of poor people based on Indonesian Central Bureau of Statistics, with calculation formula:

$$P_0 = \frac{1}{n}\sum_{i=1}^{q}\left[\frac{z-y_i}{z}\right]^0 \quad \text{.....(4)}$$

Whare: P_0 = Percentage of poor people, Poverty line (z), Average per capita expenditure per month for people who are below the poverty line: $y_i < z$ (y_i), Number of people who are below the poverty line (q), Total population (n)

Poverty line that used is poverty line at provincial during 2019 which sourced from BPS. The concept used by BPS in calculating the Poverty Line (GK) is the sum of the Food Poverty Line (GKM) and the Non-Food Poverty Line (GKNM).

As for inequality, this research used Gini ratio and also known as Gini index or Gini coefficient. The Gini index is statistical measure which shows the distribution of per capita expenditure of population in a region. A Gini index of 0 indicates the perfect equality where everyone has exactly the same income. While Gini index of 1 meaning there is significant inequality.

Simulation Scenario

In the simulation, we develop two groups of scenarios, the first group is the VAT change simulation group which consists of four scenarios. While the second group is the direct transfer simulation group which consists of three scenarios, this group is a compensation scenario developed using funds originating from additional state revenues due to changes in VAT policies (sim 1d). Scenarios are developed to provide evidence on the impact of the VAT policy that is to be studied as well as an illustration of alternative redistribution schemes through direct transfers that can be selected by targeting better levels of poverty and inequality.

Table 1. Presents Simulation Scenario

	Simulasi Perubahan PPN
sim 1a	Electricity and water VAT are exempt (counterfactual)
sim 1b	VAT on Electricity is subject to the normal rate (10%), water VAT is
sim 1c	free
sim 1d	VAT on electricity is exempt, then VAT on water is follow the normal rate (10%)

	VAT on electricity and water are adjusted to the normal rate (10%)
	Simulasi Transfer Langsung
sim 2a	Direct transfers which amount of IDR 50,000/month to beneficiary households that received PKH/KKS
sim 2b	
sim 2c	Direct transfers of IDR 90,000/month to households below the poverty line
	Direct transfers of IDR 300,000/month to households below the poverty line and received PKH/KKS

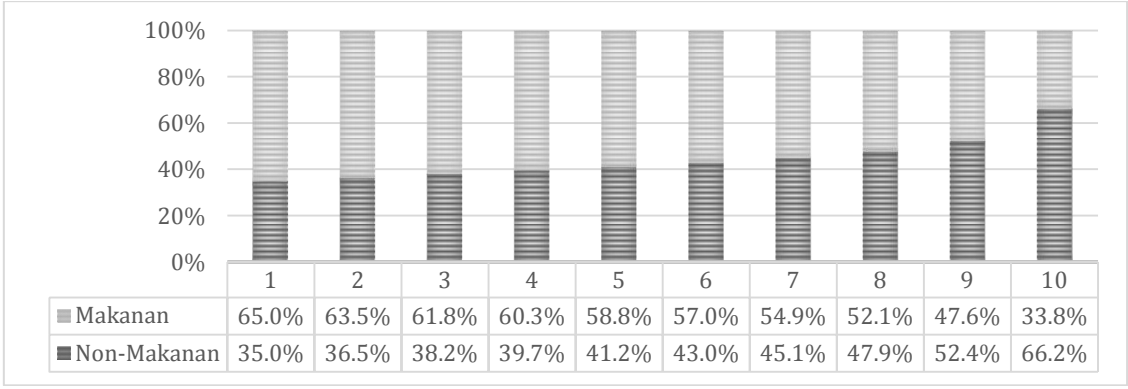
Source: Processed by Susenas Core and Consumption Module (2019)

D. EXPLANATION

Descriptive Statistics

In terms of average household expenditure, food and non-food consumption patterns has shown that the higher the income decile, the higher the expenditure for non-food consumption would be as it is shown at Figure 1 below. This supported by the Engel's law which argues that when income increases then the proportion of income spent on buying food decreases, this law shows that the proportion of expenditure on food increases is smaller than the increase in income.

Non-food consumption includes electricity and water consumption which also shows the same thing, that the higher the income decile, the higher the consumption for electricity and water. In that figure, we would classified income decile as grouped based on per capita income.



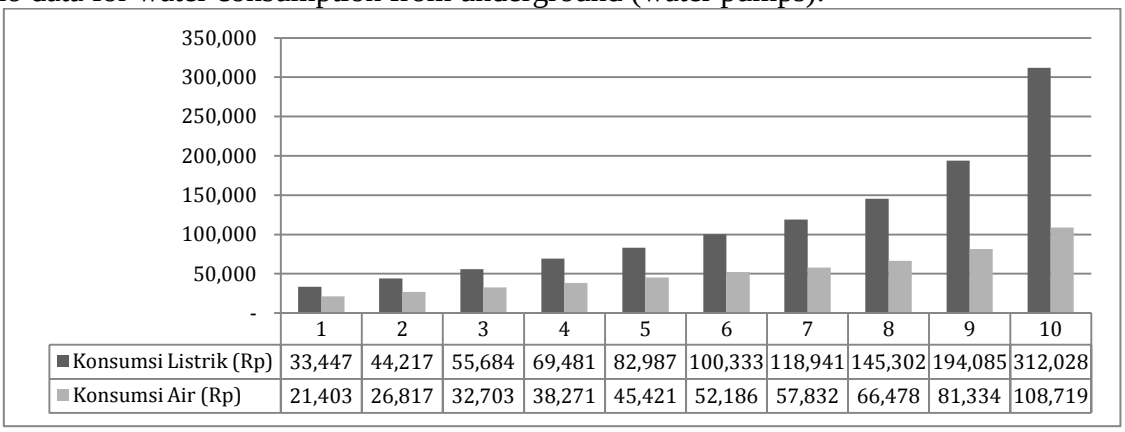
	1	2	3	4	5	6	7	8	9	10
Makanan	65.0%	63.5%	61.8%	60.3%	58.8%	57.0%	54.9%	52.1%	47.6%	33.8%
Non-Makanan	35.0%	36.5%	38.2%	39.7%	41.2%	43.0%	45.1%	47.9%	52.4%	66.2%

Note: Decile based on per-capita expenditure, the scale was the poorest is 1 and the richest is 10

Figure 3. Average Percentage of Household Consumption Expenditure in a Month (Source: Processed by Susenas Core and Consumption Module, 2019)

When viewed from the total volume of electricity and water consumption, the trends were also in line with income decile, the lowest consumes electricity of 64.7 kWh/month and water of 15.25 m3/month and the highest decile are consumes electricity of 251kWh/month and water of 38. 65m3/month. The difference in electricity consumption between the highest and lowest in kWh are distinguished by the kWh meter owned by the household according to the power capacity that can be consumed. There are several types of kWh meters which is 450VA, 900VA, 900VA-M, 1300VA, and so on. The different types of kWh

meters have implications for different electricity rates, in certain types there are subsidies from the government and there are certain types that are taxed at normal rates with standard rates (6600VA and above). Meanwhile for water, the data which gathered only those water consumption from PAM/pikulan/buy, but there is no data for water consumption from underground (water pumps).



	1	2	3	4	5	6	7	8	9	10
Konsumsi Listrik (Rp)	33,447	44,217	55,684	69,481	82,987	100,333	118,941	145,302	194,085	312,028
Konsumsi Air (Rp)	21,403	26,817	32,703	38,271	45,421	52,186	57,832	66,478	81,334	108,719

Note: Decile based on per-capita expenditure which scale of 1 for poorest and 10 for richest

Figure 4. Average Consumption of Electricity and Water in a Month (Source: Processed from Susenas Core and Consumption Module, 2019)

Poverty and Inequality before the Exemption of VAT on Electricity and Water (Counterfactual)

Elicited from the model which has been described earlier, tax burden and benefit value of each fiscal policy are then allocated to each CEQ income concept. In each income concept measure the level of poverty and inequality to assess the extent to which each policy has affects to the level of poverty and inequality. This table is illustrates the conditions of poverty and inequality before the exemption policy of VAT on electricity and water (counterfactual).

Table 2. Explains the Measurement of Poverty and Inequality by CEQ Income Concept

	Market income		Net market income		Disposible incom		Consumable income	
	Survey	Weight	Survey	Weight	Survey	Weight	Survey	Weight
Population	1,204,466	266,705,582	1,204,466	266,705,582	1,204,466	266,705,582	1,204,466	266,705,582
Poverty								
Amount of Poverty	182,332	31,924,518	182,363	31,932,449	147,704	25,071,063	156,750	26,866,335
Headcount ratio	15.14	11.97	15.14	11.97	12.26	9.40	12.93	10.07
National Poverty Rate	-	-	-	-	9.41	9.41	-	-
Inequality								
Gini Ratio	0.387	0.402	0.386	0.402	0.376	0.393	0.369	0.385
National Gini Ratio		-	-	-	0.382	0.382	-	-

Source: Processed by Susenas Core and Consumption Module (2019)

The concept of initial income, market income, namely income before fiscal intervention shows the poverty rate measured by the headcount ratio indicator which is at 11.97 percent and inequality which was measured by Gini ratio which is 0.402. Net market income shows income after deducting with personal income tax, then the simulation shows personal income tax did not really affect to the poverty and inequality levels.

Disposable income is refers to income after government transfers which depends on several types of government assistance, namely family hope program, smart Indonesia program and non-food assistance, in aggregate that these three government assistance on which have purpose to reduced the poverty rate by 2.57 percentage points or succeeded in lifting 6 million people out of poverty line As well as fixing inequality by 0.009 points.

Consumable income, namely income after subsidies and indirect taxes, subsidies which calculated and illustrates most of subsidies which received by households such as electricity, diesel, LPG and kerosene, while indirect taxes included in the model are VAT. According to the data which presented from table above, the aggregate impact on poverty has increased by 0.67 percentage points on disposable income, but then these two fiscal policies are simultaneously fixed the inequality by 0.008 points. In other words VAT policies and government subsidies have succeeded in fixing inequality but causing poverty to increase.

Because the research object of this study is the impact of VAT policy, so this research has only focused in the changes of disposable income and consumable income.

Impact from Revocation of VAT Exemption on Electricity and Water Facility

The simulation results from changes in poverty and inequality in consumable income (household income after deducting with tax burden and adding indirect subsidy benefits) sim1a are conditions which referring to the 2019 policy that used as basis of comparison in the simulation scenario.

Scenarios sim 1b and sim 1c are conditions where VAT are imposed at normal rates on electricity and water respectively, scenario sim 1b tells that VAT on electricity is subject to normal rates and water is for free, while scenario sim 1c are both of VAT on electricity and water are exempted at normal rates. The purpose in compare these two commodities is to see whether which one will affect to the household tax burden without any influence from repealing of VAT exemption on other commodities.

The increase in the effective tariff occurs in both scenarios but the increase in the commodities that still released is not too large. In sim 1b the effective tariff for electricity becomes 10.97 while the effective tariff for water only increases slightly to 1.52 percent. This is the evidence that the imposition of VAT at normal rate on electricity did not significantly affect the household tax burden on water consumption. Similarly to the scenario of sim 1c, the imposition of normal rate for VAT on water did not brought significantly affect on the tax burden on electricity consumption. The simulation results show that the poverty rate in the scenario of sim 1c is lower than sim 1b but Gini index of inequality is slightly better than sim 1b with an effect margin of -0.0002 points. By means that this imposition of VAT

on electricity has influence on the poverty rate more than on water but in both scenarios are slightly reduces the Gini ratio.

Table 3. Describes the Simulation of VAT on Electricity and Water measured by Consumable Income

	sim 1a (counterfactual)	sim 1b	sim 1c	sim 1d
Effective VAT Rate				
Electricity	3.40	10.97	3.41	10.97
Water	1.44	1.52	8.08	8.08
Other sectors (average)	6.67	6.68	6.67	6.68
Population	266,705,582	266,705,582	266,705,582	266,705,582
Proverty				
Poor People	26,866,335	26,986,086	26,892,334	27,008,616
Margin	-	119,751	25,999	142,281
Headcount ratio	10.07	10.12	10.08	10.13
Margin	-	0.04	0.01	0.05
Inequality				
Gini ratio	0.3852	0.3851	0.3852	0.3850
Margin	-	-0.0002	0.0000	-0.0002

Source: Processed by Susenas Core and Consumption Module (2019)

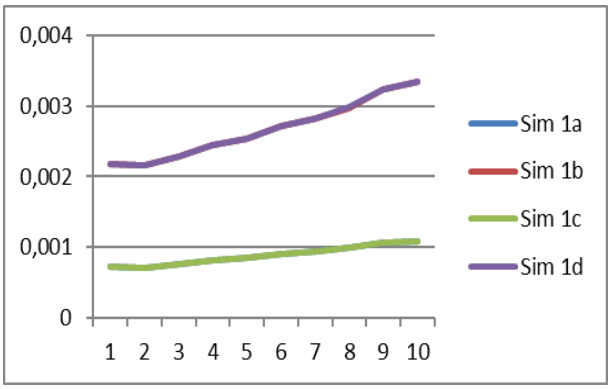
Sim 1d scenario is a scenario based on the latest policy in Indonesia whereas VAT on electricity and water are simultaneously stick to the normal VAT rate of 10 percent, in this scenario the increase in effective rate occurs for both electricity and water to 10.97 percent and 8.08 percent respectively. By means an in increase in the number of poor people by 142,281 people compared to the counter factual condition (sim 1a) with headcount ratio of 10.13 percent points and effect margin of 0.05 points. While based on gini ratio, this condition did not result in a significant change, the gini index only slightly decreased from 0.3852 to 0.3850.

Simulation result Is a condition after the model has considered its tax burden including subsidy benefits that apply in 2019 as explained earlier, tax burden on electricity in the simulation has taken into account the current conditions where households with power 6600VA and above (R-3) are subject to normal VAT rate which is 10 percent. Through Susenas data, the number of households which is only 0.2 percent from 76% are in the richest income decile (decile 10) and the rest are spread across other deciles, this number are similar to data reported by PLN at 0.4 percent. The simulation shows that even though previously households of type R-3 which had been subject to the normal rate of VAT, this small amount will not brought negative impact on inequality when the normal rate of VAT on electricity was imposed. The Gini ratio had slightly decreased slightly compared to electricity was fully charged with normal tariff.

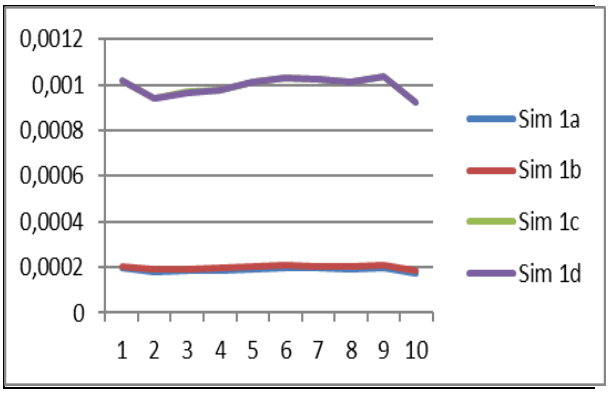
The level of poverty and inequality in consumable income might be slightly different, if indirect subsidies from the Indonesian government were adjusted to current conditions due to the Covid pandemic. There have been several other subsidies provided by the government since 2020, for example electricity subsidies which are provided free of charge to 450VA households and 900VA-unable to afford 50 percent discount which lead to the increases of electricity consumption (Resosudarmo, 2021). However, the simulation results also show the amount of margin after the subsidy took place in 2019.

If it is breakdown, the population below the poverty line before the revocation policy of VAT on electricity and water was lying in the lowest fourth decile with an average per capita expenditure between Rp.344,221 to Rp.720,844, after this policy applies, the lowest income decile are the most affected by this policy. The increase in poverty were influenced by the changes in the imposition of VAT on electricity compared to the water. As for the total, both of them will increase the poverty rate by 0.0533 percentage points.

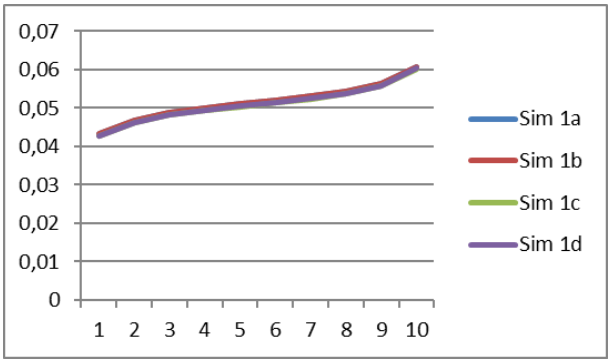
After it classified based on per capita income deciles, the increase in the proportion of VAT on electricity expenses (Graph a) was borne by the richest decile after the normal rate of VAT was imposed, the poorest decile increased by 2 times while the largest decile was 3 times the previous program, different from the hypothesized results ,This indicates that through this revocation policy of the VAT on electricity the richest decile is the party which loses more than the poorest one. This means that the proportion of increase in electricity consumption are higher than the gap between average income. In contrast to the VAT which burden on water (Graph b), it shows the trend of increasing costs did not make any difference too much between the lowest and highest deciles in conditions before and after the normal rate was imposed to the VAT on water.



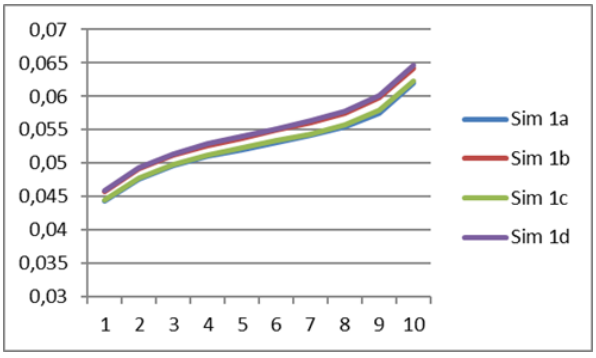
(a) VAT burden for Electricity Expenses per capita Household Expenditure (sim1a–sim1d)



(b) VAT burden for Water expenses per capita Household Expenditure (sim1a–sim1d)



(c) VAT burden for others expenses per capita Household Expenditure (sim1a–sim1d)



(d) VAT burden of total expenses per capita Household Expenditure (sim1a–sim1d)

Figure 5. VAT Burden of Household (Source: Processed by Susenas Core and Consumption Module, 2019)

On the other hand, the simulation shows that the VAT burden of household on the consumption of other goods and services (Graph c) tends to be less affected, only increasing by an average of less than 0.1 percent compared to when electricity and water receive the VAT exemption facilities. This could be the evidence that the repeal of VAT exemption on electricity and water did not significantly affect to other sectors. This likely because electricity and water are not too highly used as production inputs for other sectors. The connection between electricity, water and other sectors are also reflected in the input-output table. In other words, as a whole, these policies will have an impact on the poverty and inequality levels only through changes in the VAT burden on the consumption of these two commodities. Meanwhile, if we have a look at the tax burden as a whole, the proportion of increase seem relatively small (Graph d).

Direct Transfer Simulation

According to the simulation from the previous scenario (sim 1d scenario), it is estimated that the revokes of VAT exemption for VAT on water and electricity will increase state revenue from VAT on household consumption around 8.7 trillion rupiah. Next, we develop an alternative distribution scheme which have a targets on poor households. The redistribution scheme which prepared is conducted by the direct transfers with the assumption that the funds used in this scheme come from additional VAT revenue which obtained from the normal VAT on electricity and water.

Build up from these assumptions, the redistribution scheme through direct transfers could be divided into 3 scenarios, sim 2a transfers are given to the households who are recipient of PKH (Family Hope Program) or KKS (Prosperous Family Card) fairly with amount of IDR 50,000/month. Sim 2b transfers are distributed to every household below the poverty line based on per capita expenditure, each would be receiving around Rp.90,000/month. And the last scenario is sim 2c direct transfers which are given to the households which below the poverty line and recipients of PKH or KKS, each worth IDR 300,000 per month. The amount of transfer would be different because it is determined by calculation number of households according to Susenas data. The counterfactual

scenario occurred in the simulation of sim 1d scenario (which both of electricity and water are subject to VAT with normal rates).

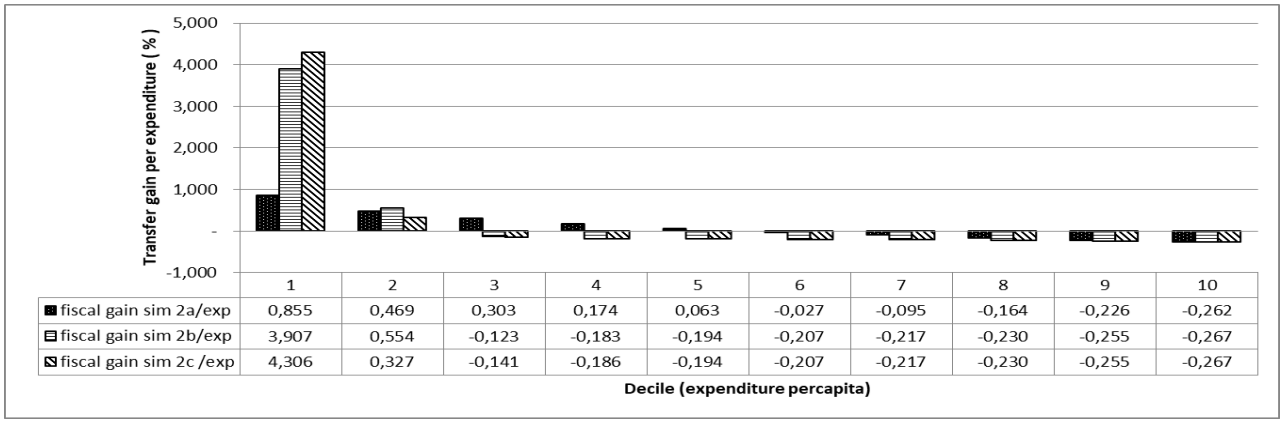
Table 4. Describes the simulation of direct transfers of compensation which measured by consumable income

	sim 1a (counterfactual)	sim 1b	sim 1c	sim 1d
Direct Transfer				
Transfer value/month per household	-	50,000	90,000	300,000
Number of households	-	10,560,288	5,363,147	1,730,376
Population of Household	71,280,887	71,280,887	71,280,887	71,280,887
Population of People	266,705,582	266,705,582	266,705,582	266,705,582
Poverty				
Poor People	27,008,616	26,397,010	26,912,707	23,186,099
Margin	-	-611,606	-2,092,909	-3,822,517
Headcount Ratio	10.13	9.90	9.34	8.69
Margin	-	-0.23	-0.79	-1.43
Inequality				
Gini Ratio	0.3850	0.3839	0.3832	0.3833
Margin	-	-0.0011	-0.0019	-0.0017

Source: Processed by Susenas Core and Consumption Module (2019)

Simulation results from (Table 4) shows that sim 2a scenario with transfer program of IDR 50,000/month for compensation which given to households who are recipient of social cards (PKH and KKS) indicates the decrease in the number of poor people but not as much as when the transfer program targeted only really poor people (sim2b) because we identified PKH and KKS social card owners not only in In the lowest decile, some of the richest decile households also have the card, in other words, it is indicated that not all PKH and KKS owners are below the poverty line. Even though the value of the transfer on sim 2b is Indeed greater which is around IDR 90,000/month.

In the sim 2c scenario, transfers are given to households below the poverty line and have social cards for PKH and KKS with the amount of IDR 300,000/month, according to Susenas, the number of recipient households is only about one third compared to the number of recipient households on sim2b, but according to this simulation, the number of poverty is reduced compared to the sim2b because the transfer value on sim2c are huge amount, however, this huge transfer value will lead to inequality not as good as in sim 2b scenario.



	1	2	3	4	5	6	7	8	9	10
fiscal gain sim 2a/exp	0,855	0,469	0,303	0,174	0,063	-0,027	-0,095	-0,164	-0,226	-0,262
fiscal gain sim 2b/exp	3,907	0,554	-0,123	-0,183	-0,194	-0,207	-0,217	-0,230	-0,255	-0,267
fiscal gain sim 2c /exp	4,306	0,327	-0,141	-0,186	-0,194	-0,207	-0,217	-0,230	-0,255	-0,267

Note: Decile based on per-capita expenditure which scale of 1 for poorest and 10 for richest

Figure 6. Fiscal gain per month of household expenditure (Source: Processed from Susenas Core and Consumption Module, 2019)

The average benefit value from transfer simulation scheme (Graph 4.7) after taking into account the increase in the additional tax burden after the repeal of VAT exemption on electricity and water then obtained the lowest decile are in both of sim 2a, sim 2b and sim 2c scenarios, the greatest benefit would be received from sim scenario of 2c. In the sim 2b and sim 2c scenarios, transfer benefits on average are not received from the third decile onwards, in contrast to the sim 2a scenario, cash transfer benefits did not reach starts from sixth decile, although this scenario are structured to reach the target of poor population (first to fourth decile), this likely happens because the criteria for beneficiaries in scenario of sim 2a, namely PKH and KKS social card holders, are not only owned by the poor decile but also the richest on.

When compared between these three scenarios which is sim 2a, sim 2b and sim2c, all of them actually has effectiveness in reducing the poverty rate but gini ratio would be fits with simulation 2b while the lowest headcount ratio is shown through sim 2c, this difference occurred due to the difference in the number of transfers and its recipient. Direct transfers can go straight to the targeted parties which more accurately, in contrast to the VAT exemption on electricity and water where benefits are not only obtained for low income deciles.

Overall, the simulation results for all scenarios indicates that direct transfers are more effective in decreasing the poverty and inequality compared to the conditions when electricity and water are included as VAT exempt. In other words, the impact caused by imposing VAT which balancing by redistribution through direct transfers which considered as the right target recipients with right amount of transfers has way more effective in handling poverty and inequality.

By referring to previous studies that related to the impact of VAT policies through microsimulation model method which is mostly done to investigate the impact from tax policy in general such as what Warwick et al. (2022) explained on his research on 6 LMIC countries, Amlani (2019) examined the elimination of Preferential VAT in Tunisia, and Gcabo et al. (2019) learn about the increasing of VAT rates in South Africa and several other studies related to the impact of VAT

policies on certain commodities which studied by Maskaeva et al. (2019) regarding the increased taxes on alcohol and tobacco products in Tazmania, and Cirillo et al (2021) regarding the decreases VAT rates in Italy for basic goods/services and baby diapers. This research has focused in providing analysis results towards the impact from revocation of VAT exemption policy according to *Undang-undang No. 7 Tahun 2021* towards electricity and water facilities in Indonesia through microsimulation model approach including alternative redistribution policies in turns over the emerging poverty and inequality, such as providing alternative compensation to improve the impact caused by the assumption that costs come from additional revenue obtained from the imposition of VAT rates normal for electricity and water which comes from households and the distribution through cash transfers could be an effective policy to improve poverty and inequality levels.

E. CONCLUSION

Conclusion

The government through the *Undang-undang No. 7 Tahun 2021* seeks to accelerate the recovery in country's economic and stability after Covid-19 pandemic, one of method used by expanding the tax base. By means that imposing the VAT on electricity and water to its standard rates from previously exempted. This research aims to evaluate the effect caused of this policy on household income and its overall implications for poverty and inequality levels. This evaluation was conducted by simulating several scenarios for imposing VAT on electricity and water as well as scenarios for providing direct transfers as an alternative to redistributes the compensation by the use of 2019 Susenas survey data.

The repealing of VAT exemption for electricity and water facility has brought an impact on the increasing of tax burden, the increase in expenses only occurs for the consumption of these two commodities while not for other commodities. For electricity tax burden, the proportion of increase for the richest decile would be greater than for the poorest ones, while for water the increase is relatively similar for both poorest and riches. But the proportion of the burden of these two commodities are not that huge compared to the burden as a whole.

Generally, this simulation results has shown that this policy is slightly increases the poverty rate by 0.05 percentage point but did not have an adverse impact on inequality, by assuming the demand for goods which did not change. The additional state revenue obtained from the imposition of VAT on electricity and water which can be redistributed through direct transfers with better level of poverty and inequality than the previous conditions (when electricity and water were exempted from VAT), this could be realized with noted that all the transfer scheme are directly distribute to the society by right calculations of value and right target person.

The Implication for this Policy

Quoted from simulation results, it is known that the revocation of VAT exemption for electricity and water facilities according to the *Undang-undang No. 7 Tahun 2021* can slightly increase the poverty rate but did not have an impact on

inequality. Increasing state revenues through abolition of VAT on electricity and water appears to be less bad way to go as the higher VAT burden remains on the richest income households. However, by considering that lately the households who use electricity are more than 97 percent, meaning that the majority of low-income household deciles will receive an additional tax burden, so this policy implementation needs to be balanced with its compensation which targeting on poor households.

Cash transfers could be an option because it way more effective in overcomes the poverty and inequality problem. Due to cash transfers is considered available to reached those targets who will receive the compensation, the cautions are still needed in determining indicators of recipients of compensation and these indicators need to be updated regularly based on fact of the real conditions of households.

An alternative budget that the government can use are those fund cash which source from part of additional state revenue caused by this policy, the other part can be used to assist other strategic needs, for example post-pandemic economic recovery or reopened job vacancy and so on.

In addition, these results can be a trigger for doing evaluation towards the effectiveness of policies regarding other VAT reductions/exemptions as a whole, especially for equity reasons.

Research Limitations

Limitations in this research could be written as follows:

1) This research uses simulations from household survey data for only one period, this likely happen because this policy just have been implemented that year therefore there is no data which can present the actual impact.
2) The elasticity of price of consumer goods and production inputs are assumed as zero or unchanged. For future research are advised to consider this price elasticity to get better reflect of the true effect.
3) The simulation did not recognize personal behavior effects, general balance effects and COVID-19 pandemic effect which likely have an impact on different results.
4) This Research only centered on the impact at individual level, but did not take into account about the influence which occurred at the industrial level.

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