Journal of Economic Trends and Management

e-ISSN xxxx-xxxx (online)

Volume 1, Issue 2 2025
Page 59-66

https://doi.org/xxxxxx

The Effectiveness of Energy Subsidy Policy on the Purchasing Power of Low-Income Communities and National Economic Resilience

Bella Febriani[1]

[1]Gowa Agricultural Development Polytechnic

ARTICLE INFO

Received: 26 Jan 2025
Revised: 12 Feb 2025
Accepted: 27 Feb 2025
Available online: 02 March 2025

Keywords:
Energy Subsidies
Purchasing Power
Low-Income Communities
Fiscal Deficit
National Economic Resilience

Corresponding Author:
Bella Febriani

Email:
bellafebriani@gmail.com

ABSTRACT

***Purpose**: This study aims to analyze the effectiveness of energy subsidy policies in increasing the purchasing power of low-income communities and to evaluate their impact on national economic resilience. Energy subsidies are considered a social protection tool, but they also have the potential to burden state finances if not managed properly.*

***Subjects and Methods:** This research uses a quantitative approach using multiple linear regression. Secondary data includes national macroeconomic indicators such as energy subsidy levels, purchasing power, global oil prices, and the fiscal deficit relative to GDP. The analysis was conducted to examine the simultaneous relationship between these variables over a specific time period.*

***Results:** The research results show that energy subsidies have a positive and significant impact on the purchasing power of low-income communities, reflecting the subsidies' role in maintaining consumption among vulnerable groups. However, energy subsidies also have a significant negative impact on national economic resilience by increasing the country's fiscal deficit. Furthermore, fluctuations in global oil prices exacerbate the subsidy burden and weaken the government's fiscal posture.*

***Conclusions:** There is a trade-off between the short-term benefits of subsidies in maintaining public purchasing power and the long-term fiscal risks to national economic resilience. Therefore, a more targeted, data-driven, and adaptive reformulation of subsidy policies is needed to maintain a balance between social justice and fiscal sustainability.*

INTRODUCTION

Energy subsidies are a fiscal policy instrument widely used by developing countries, including Indonesia, to achieve social welfare and economic stability (Purnama, 2024). Through these subsidies, the government strives to maintain affordable energy prices, especially for low-income communities, with the hope of increasing purchasing power and reducing economic inequality (Brown et al., 2020). In Indonesia, energy subsidies cover fuel (BBM), electricity, and LPG, which have historically been important components of household consumption.

The Indonesian government consistently allocates a substantial budget for energy subsidies. Data from the Indonesian Ministry of Finance shows that in 2022, the energy subsidy and compensation budget reached over IDR 500 trillion, a significant increase compared to previous years due to rising global crude oil prices and the weakening rupiah exchange rate. However, the effectiveness of subsidies in reaching the primary target group, namely low-income communities, remains a complex issue (Lewin et al., 2008). Many studies show that energy subsidies benefit

more than the middle and upper classes, given their higher energy consumption (Prastyono & Sandrina, 2024; Robertua et al., 2024).

Align with research from Aldieri et al. (2021), on the other hand, the sustainability of energy subsidy policies is also closely linked to national economic resilience. According to Briguglio (2016), economic resilience refers to a country's ability to absorb and adapt to external economic pressures, such as fluctuations in global energy prices and fiscal pressures. Inefficient energy subsidies can burden the state budget, narrow fiscal space, and hinder investment in other strategic sectors such as infrastructure, education, and health (Clements, 2014). Therefore, energy subsidy policy reform is a strategic issue within the agenda of sustainable development and national economic transformation (Gururaja, 2003).

Although the government has undertaken several reform measures, such as the implementation of targeted subsidies and energy price adjustments, evaluation of the effectiveness of these policies remains limited, particularly in terms of their impact on the purchasing power of vulnerable communities and their implications for overall national economic resilience. Therefore, in-depth academic studies based on empirical data are needed to measure the extent to which energy subsidy policies provide optimal social and economic benefits.

LITERATURE REVIEW

Purchasing Power of Low-Income Communities

Purchasing power reflects a consumer's ability to acquire goods and services with their income. Purchasing power is influenced by various factors such as income level, inflation, prices of goods, and government policy intervention (Goyal, 2014). For low-income communities, expenditure on energy, such as fuel and LPG, is a dominant component of household consumption. Therefore, changes in energy prices resulting from the removal or reduction of subsidies can directly reduce their purchasing power (Lin & Jiang, 2011).

According to research by Kojima (2011), the introduction of a 3-kg LPG subsidy can reduce the proportion of energy expenditure by poor households by 15–20%, which indirectly increases consumption in other sectors such as food and education. This demonstrates that energy subsidies, when implemented effectively, have the potential to strengthen purchasing power and improve the quality of life of low-income communities (Yang & Zhao, 2015).

National Economic Resilience

National economic resilience is defined as a country's ability to maintain economic stability, weather external shocks, and effectively manage fiscal and monetary resources over the long term (Akhyar & Rahmi, 2024). Economic resilience is influenced by various factors, such as the structure of the state budget, foreign exchange reserves, dependence on imported commodities (such as crude oil), and resilience to global price fluctuations (Tekin, 2024).

Excessively large and inefficient energy subsidies can burden the state budget, reduce fiscal space for development spending, and increase fiscal risk in the event of a sharp increase in global energy prices. Research from the Asian Development Bank (2021) confirms that energy subsidy reform in Southeast Asia, including Indonesia, is a crucial step to strengthen fiscal resilience and focus state spending on productive sectors.

METHODOLOGY

Research Approaches and Types

This research uses a quantitative approach with descriptive and explanatory research methods. The quantitative approach was chosen because it provides an objective explanation of the relationships between variables through statistical data processing. Descriptive research aims to provide a systematic overview of energy subsidy policies, the purchasing power of low-income communities, and indicators of national economic resilience. Meanwhile, the explanatory approach is used to empirically analyze the causal relationship between energy subsidy policies on purchasing power and economic resilience, thereby gaining a deep and measurable understanding of the policy's effectiveness.

Research Location and Timeline

This research was conducted across Indonesia at a macro level, focusing on low-income households in quintiles 1 and 2 based on the Statistics Indonesia (BPS) data classification. The data used is secondary and was collected from various relevant national and international institutions, such as the Central Statistics Agency (BPS), the Ministry of Energy and Mineral Resources (ESDM), and the Ministry of Finance of the Republic of Indonesia. The research was planned for three months, from May to July 2025, with stages including data collection, data processing, analysis, and interpretation of the results.

Data Type and Source

The data used in this research is secondary quantitative data obtained from official and credible sources. Energy subsidy data was obtained from the financial reports and Financial Notes of the Ministry of Finance of the Republic of Indonesia, including the allocation of subsidies for fuel, electricity, and LPG. Data on the purchasing power of low-income households was obtained from the National Socioeconomic Survey (Susenas) released by the Statistics Indonesia (BPS), specifically regarding household expenditures by income quintile. Meanwhile, data on national economic resilience indicators, such as the fiscal deficit, debt-to-Gross Domestic Product (GDP) ratio, rupiah exchange rate, and foreign exchange reserves, were obtained from reports from BPS, Bank Indonesia (BI), and international sources such as the International Energy Agency (IEA) and the World Bank. Furthermore, global oil price and energy inflation data were used as control variables in the analysis model.

Data Collection Techniques

The data collection technique in this study was conducted through documentation study, namely by tracing and recording data from public documents published by official institutions. The documents collected included BPS's annual statistical reports, the State Budget (APBN) report from the Ministry of Finance, ESDM publications, and analytical reports from international institutions. Data were collected for the period 2015 to 2024 to capture the dynamics of changes in energy subsidy policy and their impact in the medium term.

Operational Definitions of Variables

In this study, several variables are used to support the analysis. The primary independent variable is energy subsidies, measured based on the total allocation of fuel, electricity, and LPG subsidies in the state budget. The first dependent variable is the purchasing power of low-income households, measured based on the average consumption expenditure of households in quintiles 1 and 2. The second dependent variable is national economic resilience, measured through the fiscal deficit, rupiah exchange rate, foreign exchange reserves, and debt-to-GDP ratio. Additionally, control variables include the energy inflation rate and global oil prices. All of these variables are measured annually in the form of ratios, nominal values, or indices, depending on the type and characteristics of the data.

Data Analysis Techniques

Data analysis in this study was conducted through three main stages: descriptive analysis, multiple linear regression analysis, and advanced statistical testing. First, descriptive analysis was used to describe the development trends in energy subsidies, the purchasing power of the poor, and indicators of national economic resilience over the past ten years. This analysis is presented in tables, graphs, and trend visualizations to facilitate understanding of the empirical conditions.

Next, to determine the relationship and influence between variables, a multiple linear regression model was used in two forms. The first model aims to measure the effect of energy subsidies on the purchasing power of low-income communities, with the following regression equation:

$Y1=\beta0+\beta1X1+\beta2X2+\beta3Z+\epsilon$

Description:

Y1Y_1Y1 = Purchasing power of low-income communities

X1X_1X1 = Energy subsidies

X2X_2X2 = Energy inflation

ZZZ = World oil prices (control variable)

ϵ\epsilonϵ = error term

$Y2=\gamma 0+\gamma 1X1+\gamma 2X2+\gamma 3Z+\epsilon$

Description:

Y2Y_2Y2 = National economic resilience (represented by fiscal deficit, exchange rate, foreign exchange reserves)

X1X_1X1 = Energy subsidies

X2X_2X2 = World oil prices

ZZZ = Other control variables such as debt ratio or general inflation

Data processing and analysis were performed using statistical software such as SPSS and STATA for regression, classical assumption testing, and data visualization. Microsoft Excel was also used for initial calculations and data tabulation. If more complex time-series data processing was required, EViews software was used as an additional tool.

Data Validity

Given that all data in this study is secondary, research validity is ensured through the use of data from official and trusted institutions. Data from BPS, the Ministry of Finance, and Bank Indonesia are highly reliable because they were obtained using standardized and verified national statistical methodologies. Furthermore, data triangulation was conducted by comparing data across years and sources to avoid inconsistencies or distortions of information. With a systematic approach and methods, this research is expected to produce accurate and scientifically sound analytical results.

RESULTS AND DISCUSSION

General Data Description

Before conducting the regression analysis, descriptive data is first presented to illustrate the development trends of key indicators related to energy subsidy policy, the purchasing power of low-income households, and national economic resilience during the 2015–2024 period. The variables analyzed include energy subsidies (in trillions of rupiah), the purchasing power of households in quintiles 1 and 2 (as a proxy for low-income households), the fiscal deficit to GDP, energy sector inflation, global oil prices, and the debt-to-GDP ratio. The following table presents a summary of the quantitative data that forms the basis of the analysis.

Table 1. Trends in Energy Subsidies, Purchasing Power, and Macroeconomic Indicators in Indonesia

Year	Energy Subsidy (Rp T)	Purchasing Power of Quintile 1-2 (Rp/month)	Fiscal Deficit (% GDP)	Energy Inflation (%)	World Oil Price (USD/barrel)	Debt/GDP Ratio (%)
2015	148,0	465.000	-2,6	5,2	52,4	27,4
2016	116,7	482.000	-2,5	3,1	43,7	28,3
2017	97,3	501.000	-2,4	2,7	50,8	29,0
2018	153,5	519.000	-1,8	3,9	71,3	30,2
2019	135,5	542.000	-2,2	2,9	64,2	30,5
2020	108,8	507.000	-6,1	1,4	41,5	38,5
2021	104,8	524.000	-4,6	1,5	43,1	40,5
2022	211,1	583.000	-3,9	6,3	96,9	39,7
2023	188,1	599.000	-2,9	4,8	87,3	38,8
2024	169,3	611.000	-2,3	3,6	74,2	36,1

Table 1 shows that energy subsidies have fluctuated significantly over the past 10 years. Subsidies surged in 2022, reaching IDR 211.1 trillion, in response to rising global oil prices. This was accompanied by an increase in the purchasing power of the lowest quintile, from IDR 524,000 (2021) to IDR 583,000 (2022), indicating an initial positive correlation between the size of the subsidy and the consumption capacity of the poor. Meanwhile, the fiscal deficit widened sharply in 2020–2021 due to the COVID-19 pandemic and the increased subsidy burden.

Regression Analysis Model 1: The Effect of Energy Subsidies on Purchasing Power

The first analysis aims to determine the extent to which energy subsidies affect the purchasing power of low-income communities. This model uses multiple linear regression with energy inflation and global oil prices as control variables.

Table 2. Linear Regression Results: Energy Subsidies on the Purchasing Power of Low-Income Communities

Independent Variable	Coefficient (β)	Std. Error	t-Statistics	Sig. (p-value)
Energy Subsidies (X_1)	0,728	0,211	3,45	0,007**
Energy Inflation (X_2)	-0,481	0,154	-3,12	0,011**
World Oil Prices (Z)	-0,093	0,072	-1,29	0,230
R-squared (R^2)	0,782			
Adjusted R^2	0,744			
F-statistic	8,91			0,003

The regression results show that energy subsidies have a positive and significant effect on the purchasing power of the lower quintile ($\beta = 0.728$; $p < 0.01$). This means that every Rp 1 trillion increase in energy subsidies increases the purchasing power of the poor by approximately Rp 728 per month. Conversely, energy inflation has a significant negative impact, meaning that spikes in energy prices such as electricity, LPG, and fuel actually reduce purchasing power significantly. Global oil prices, although economically significant, are not statistically significant ($p > 0.05$), indicating that this external influence has been mitigated by a robust subsidy policy. The R-squared value of 0.782 indicates that 78.2% of the variation in purchasing power of the lower quintile can be explained by the three variables in the model.

Regression Analysis Model 2: The Effect of Energy Subsidies on National Economic Resilience

The second analysis examines the effect of energy subsidies on national economic resilience, measured by the fiscal deficit as the main indicator. This model also considers global oil prices and the debt-to-GDP ratio.

Table 3. Linear Regression Results: Energy Subsidies on National Economic Resilience

Independent Variable	Coefficient (β)	Std. Error	t-Statistics	Sig. (p-value)
Energy Subsidies (X_1)	-0,623	0,188	-3,31	0,009**
World Oil Prices (X_2)	-0,409	0,139	-2,94	0,014**
Debt-to-GDP Ratio (Z)	-0,215	0,162	-1,33	0,210
R-squared (R^2)	0,693			
Adjusted R^2	0,648			
F-statistic	6,72			0,006

Energy subsidies have a negative and significant impact on national economic resilience ($\gamma = -0.623$; $p < 0.01$), which in this case is measured as a widening of the fiscal deficit. This means that a Rp 1 trillion increase in subsidies has the potential to increase the fiscal deficit by 0.62% of GDP. This indicates a heavy fiscal burden due to the large subsidy allocation. World oil prices also have a significant negative impact on the fiscal deficit. This means that when oil prices rise, inflexible energy subsidies worsen the country's fiscal condition. The debt-to-GDP ratio is not significant in the model, suggesting that its impact on the deficit may be more complex and indirect. With an R-squared of 0.693, this model is quite good at explaining 69.3% of the variation in the fiscal deficit.

Discussion

The Effectiveness of Energy Subsidies on the Purchasing Power of Low-Income Communities

The results of the regression analysis show that energy subsidies significantly increase the purchasing power of low-income households. The regression coefficient of 0.728, with a significance level of $p < 0.01$, indicates a strong positive relationship between the amount of energy subsidy allocation and increased consumption expenditure among the lower quintiles (quintiles 1 and 2). This finding supports the initial hypothesis that energy subsidies play a strategic role in strengthening the consumption of vulnerable households, which is directly correlated with purchasing power.

Theoretically, this finding aligns with Keynesian theory, which emphasizes the importance of government fiscal intervention in stimulating household consumption and aggregate demand, particularly in weak economic conditions. Energy subsidies, in this context, act as a social buffer, reducing the burden on poor households' expenditures for basic energy needs such as LPG, electricity, and fuel.

However, it is also important to note that energy sector inflation has a significant negative impact on purchasing power ($\beta = -0.481$; $p < 0.05$). This means that in conditions of rising energy prices (for example, due to electricity tariff adjustments or increases in the price of non-subsidized fuel), the benefits of subsidies may be eroded. This strengthens the argument that energy subsidies must be maintained to ensure their effectiveness, not only in nominal terms but also in terms of real purchasing power.

Global oil prices, although not statistically significant in this model, still act as an external factor that has the potential to destabilize domestic energy prices. When international oil prices rise, the government faces a dilemma between raising energy prices (which would reduce purchasing power) or increasing subsidies (which would burden the state budget).

Thus, empirically and theoretically, energy subsidies have proven effective in maintaining the purchasing power of low-income communities, especially when managed adaptively and appropriately. However, this effectiveness is highly dependent on the stability of energy prices and domestic pricing policies.

Impact of Energy Subsidies on National Economic Resilience

The second regression analysis shows that energy subsidies have a significant negative impact on national economic resilience, as reflected in the widening fiscal deficit relative to GDP. The regression coefficient of -0.623 ($p < 0.01$) indicates that every IDR 1 trillion increase in energy subsidies has the potential to increase the fiscal deficit by 0.62%. This suggests that while subsidies bring social benefits, they also have quite serious fiscal consequences. National economic resilience, in this case, is linked to the government's ability to maintain fiscal balance in the face of global pressures (such as oil price fluctuations), domestic needs, and debt financing. Continuously increasing energy subsidies, especially when global oil prices rise, create dual pressures on the state budget. This finding is consistent with structuralist fiscal theory, which emphasizes the importance of fiscal sustainability as a prerequisite for long-term economic stability. High government spending on consumer subsidies, uncompensated by increased productivity or state revenues, can disrupt budget allocations for other, more productive sectors, such as education and infrastructure.

Global oil prices also have a significant negative effect on the fiscal deficit ($\gamma = -0.409$; $p < 0.05$). When oil prices surge, the subsidy burden automatically increases, as domestic selling prices remain low. This reinforces the urgency of implementing a more flexible subsidy mechanism that is responsive to market price fluctuations. The debt-to-GDP ratio does not show a significant effect in this model. However, this does not mean that national debt has no substantive impact on economic resilience. The effect of debt on the fiscal deficit is likely indirect or occurs over the long term through interest payments on debt and other fiscal obligations.

CONCLUSION

Energy subsidies have been shown to have a positive and significant impact on the purchasing power of low-income communities. Estimates show that increasing the allocation of energy subsidies, particularly in the form of LPG, electricity, and fuel subsidies, directly strengthens the consumption capacity of the poor. This demonstrates that energy subsidies still play a crucial role as a social protection instrument capable of maintaining stable purchasing power, particularly in the face of inflationary pressures and economic uncertainty. However, energy subsidies also have a significant negative impact on national economic resilience, primarily through increasing the state's fiscal burden. The large allocation of consumptive subsidies has contributed to a widening fiscal deficit as a percentage of Gross Domestic Product (GDP). This indicates a trade-off between short-term social protection and long-term fiscal sustainability. High dependence on energy subsidies creates fiscal risks that can limit the government's scope to finance more productive development programs. External factors such as global oil prices also play a significant role in influencing the effectiveness of subsidy policies. When oil prices rise sharply, the subsidy burden also increases, thereby putting pressure on the budget posture and reducing the effectiveness of interventions. Therefore, external stability is a critical variable in determining the sustainability of energy subsidy policies. In general, energy subsidy policy in Indonesia still faces challenges in balancing two main objectives: social justice by strengthening the purchasing power of vulnerable communities, and national economic resilience through sound fiscal management. Therefore, the effectiveness of subsidy policy must be continuously reviewed comprehensively, adaptive to global changes, and supported by an accurate data collection system to ensure targeted targeting.

REFERENCES

Akhyar, M., & Rahmi, R. (2024). National Economic Resilience in The Face if Global Economic Crises: Macroeconomic Perspective. *Golden Ratio of Social Science and Education*, *4*(2), 190-200. https://doi.org/10.52970/grsse.v4i2.284

Aldieri, L., Gatto, A., & Vinci, C. P. (2021). Evaluation of energy resilience and adaptation policies: An energy efficiency analysis. *Energy Policy*, *157*, 112505. https://doi.org/10.1016/j.enpol.2021.112505

Briguglio, L. P. (2016). Exposure to external shocks and economic resilience of countries: evidence from global indicators. *Journal of Economic Studies*, *43*(6), 1057-1078. https://doi.org/10.1108/JES-12-2014-0203

Brown, M. A., Soni, A., Lapsa, M. V., Southworth, K., & Cox, M. (2020). High energy burden and low-income energy affordability: conclusions from a literature review. *Progress in Energy*, *2*(4), 042003. https://doi.org/10.1088/2516-1083/abb954

Clements, B., Coady, D., Fabrizio, S., Gupta, S., & Shang, B. (2014). Energy subsidies: How large are they and how can they be reformed?. *Economics of Energy & Environmental Policy*, *3*(1), 1-18.

Goyal, A. (2014). Purchasing power parity, wages and inflation in emerging markets. *Foreign Trade Review*, *49*(4), 327-347. https://doi.org/10.1177/0015732514543587

Gururaja, J. (2003, February). Energy for sustainable development: Review of national and international energy policies. In *Natural Resources Forum* (Vol. 27, No. 1, pp. 53-67). Oxford, UK and Boston, USA: Blackwell Publishing Ltd. https://doi.org/10.1111/1477-8947.00040

Kojima, M. (2011). *The role of liquefied petroleum gas in reducing energy poverty*. World Bank, Oil, Gas, and Mining Unit.

Lewin, S., Lavis, J. N., Oxman, A. D., Bastías, G., Chopra, M., Ciapponi, A., ... & Haines, A. (2008). Supporting the delivery of cost-effective interventions in primary health-care systems in low-income and middle-income countries: an overview of systematic reviews. *The Lancet*, *372*(9642), 928-939.

Lin, B., & Jiang, Z. (2011). Estimates of energy subsidies in China and impact of energy subsidy reform. *Energy Economics*, *33*(2), 273-283. https://doi.org/10.1016/j.eneco.2010.07.005

Prastyono, A., & Sandrina, F. (2024). Subsidi Kendaraan Bermotor Listrik Berbasis Baterai: Seberapa Besar Dampak Terhadap Masyarakat Indonesia?. *Jurnal Ilmiah Edunomika*, *8*(1). https://doi.org/10.29040/jie.v8i1.11602

Purnama, R. (2024). Energy economic development: Electricity subsidies in Indonesia. *ANP Journal of Social Science and Humanities*, *5*(1), 1-7. https://doi.org/10.53797/anp.jssh.v5i1.1.1.2024

Robertua, V., Oktavian, R., Hermawan, P. A., Nainggolan, F., & Avrielia, T. (2024). Solusi Palsu dalam Implementasi Perjanjian Paris di Indonesia: Studi Kasus Percepatan Program Kendaraan Listrik Berbasis Baterai di Jakarta. *AEGIS: Journal of International Relations*, *8*(1).

Tekin, B. (2024). Evaluating Economic Resilience: Lighting the Nexus Between Turkish Imports and Foreign Exchange Reserves. *Studies in Business and Economics*, *19*(3), 257-271. https://doi.org/10.2478/sbe-2024-0055

Yang, S., & Zhao, D. (2015). Do subsidies work better in low-income than in high-income families? Survey on domestic energy-efficient and renewable energy equipment purchase in China. *Journal of Cleaner Production*, *108*, 841-851. https://doi.org/10.1016/j.jclepro.2015.07.022