

Household Consumption Resilience Amid Surging Energy and Food Prices

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ABSTRACT

Household consumption resilience faces serious challenges due to the volatility of global commodity prices. This study aims to analyze the impact of price shocks in the food and energy sectors on household expenditure patterns across five representative provinces in Indonesia (Lampung, DKI Jakarta, Central Java, East Kalimantan, and South Sulawesi). Using Multiple Linear Regression Analysis with secondary data from the Central Bureau of Statistics (BPS) for January 2025, this research finds that energy price shocks (X2) have a nominal coefficient impact (313,413) significantly larger than food price shocks (X1) at 91,754. Although statistical tests indicate non-significant results ($p > 0.05$) due to the limited sample size ($n = 5$), these empirical findings suggest that household expenditure structures are more vulnerable to fluctuations in energy costs (electricity and fuel). These results recommend strengthening targeted energy subsidy policies as a vital instrument to maintain the consumption resilience of vulnerable populations.

Keywords: Energy Price Shocks, Food Inflation, Household Consumption, Multiple Linear Regression.

Introduction

Simultaneous spikes in food and energy prices pose a serious threat to household consumption resilience, particularly among low-income groups. Price increases for staple commodities such as rice, cooking oil, and LPG are often not accompanied by a corresponding rise in income, thereby directly eroding the public's real purchasing power. This situation forces poor households to make drastic adjustments to their consumption patterns, with the majority of their income allocated solely to meeting basic needs.[1], [2], [3].

Consequently, a significant shift has occurred in household consumption patterns, as households are forced to adopt adaptation strategies such as switching to cheaper commodities and cutting back on non-essential expenditures to maintain their purchasing power.[4], [5]. Therefore, maintaining the stability of household consumption is crucial, not only for the well-being of the people but also as a key foundation for sustaining national economic resilience amid the global crisis.[6], [7]. Adaptation implemented within households maintains food security amidst ongoing national economic instability.

This study identifies that resilience is not solely determined by economic factors but also by resilience capacity, collective solidarity, and the strength of social networks. This research provides conceptual and empirical contributions to policy development, particularly in strengthening social protection, local food management, and economic empowerment programs for households vulnerable to commodity price fluctuations, and in examining the impact of declining rubber prices on community welfare.[8]. Therefore, to understand how households cope with food security in the face of uncertain economic dynamics, strategies are needed, starting with household budgeting that manages and allocates household income to align with expenses. Income verification and financial management by obtaining income not only from one source, but also from other sources (employment), to increase financial stability[9], [10], [11]. Household consumption patterns have a significant influence on consumption decisions, directly related to purchasing power and spending priorities. When spending decreases, households typically prioritize basic needs to maintain control of their budgets.

Household consumption resilience has become an increasingly important topic in economic research, particularly amid global economic uncertainty, inflationary pressures, and commodity price volatility. Household consumption resilience refers to the ability of households to maintain stable consumption levels and preserve welfare despite economic shocks such as inflation, unemployment, or rising food and energy prices.[12], [13], [14].

According to recent economic literature, household resilience is closely related to income stability, consumption diversification, savings capacity, and access to social protection mechanisms. Households with stronger financial buffers and diversified income sources tend to demonstrate greater resilience during economic disruptions.[15], [16]. Conversely, households with limited income flexibility and high dependence on essential goods are more vulnerable to price shocks.

A recent study examining 87 developing countries found that increasing economic uncertainty significantly reduces household consumption growth. However, social protection programs, remittances, and government transfers can mitigate these adverse effects and strengthen household resilience. These findings suggest that economic shocks not only affect household income but also alter consumption behavior and long-term welfare outcomes.[17].

Furthermore, resilience is commonly measured using multidimensional indicators rather than single economic variables. Previous research identifies several indicators of household resilience, including food consumption stability, income diversification, access to social safety nets, savings capacity, and expenditure adjustment behavior.[18], [19]. These indicators provide a more comprehensive understanding of household resilience than traditional economic measures, such as inflation or income alone.

In addition, food price volatility plays a significant role in shaping household consumption patterns. Food price shocks have been shown to reduce household consumption, particularly in low-income households. A cross-country study covering 70 developing nations found that rising food prices significantly reduce household consumption, although government interventions such as subsidies and fiscal policies can mitigate the negative effects.

These findings indicate that multiple economic factors, including price stability, income dynamics, and policy interventions, influence household consumption resilience.[20], [21]. Therefore, analyzing household consumption resilience requires a broader framework beyond simple descriptive analysis of inflation data.

Household consumption resilience is a multidimensional concept that integrates economic stability, consumption behavior, and adaptive capacity. In the context of rising food and energy prices, households typically adopt various strategies to maintain consumption stability.

These strategies include:

1. reducing non-essential consumption
2. switching to lower-cost goods
3. increasing labor participation
4. Utilizing savings
5. borrowing or accessing social assistance

Economic theory suggests that households respond to price shocks by smoothing consumption.[22], [23]. This behavior involves maintaining essential consumption while reducing discretionary spending. Low-income households tend to allocate a larger share of their income to food and energy, making them more vulnerable to price increases. Recent global evidence shows that food price inflation significantly influences consumption decisions, particularly in developing economies where food expenditures account for a large portion of household spending. In such contexts, price increases directly reduce purchasing power and force households to adjust their consumption patterns.

Additionally, structural determinants such as demographic characteristics, employment conditions, and government policy interventions influence household resilience.[7], [24], [25]. A recent study using panel data from 2000 to 2023 found that macroeconomic conditions and food price inflation significantly affect food security and household consumption behavior. Therefore, analyzing household consumption resilience requires an integrated framework combining economic shocks, household responses, and policy interventions.

Household consumption resilience has become an increasingly important topic in economic research amid global inflation, commodity price volatility, and economic uncertainty. Household consumption resilience refers to the ability of households to maintain stable consumption levels and preserve welfare despite economic shocks such as rising food and energy prices, income instability, and inflationary pressures.

Research Method

Research Design

This study employs a quantitative-explanatory research design to investigate the causal relationship between inflationary shocks and household economic behavior. The analysis utilizes secondary data from the Indonesian Central Bureau of Statistics (BPS) for January 2025. The sample consists of five

strategically selected provinces: Lampung, DKI Jakarta, Central Java, East Kalimantan, and South Sulawesi, representing diverse economic structures across the Indonesian archipelago.

Operationalization of Variables

To ensure a non-speculative analysis, the variables are strictly defined based on BPS classification:

1. Independent Variable 1 (X_1 - Food Inflation)
Measured by the Year-on-Year (y-on-y) inflation rate of the "Food, Beverages, and Tobacco" expenditure group. This represents the volatility of essential calorie intake costs.
2. Independent Variable 2 (X_2 - Energy Inflation)
Measured by the y-on-y inflation rate of the "Housing, Water, Electricity, and Household Fuel" group. This serves as a proxy for mandatory energy-related overhead costs.
3. Dependent Variable (Y - Consumption Resilience)
Proxied by the Average Monthly Per Capita Expenditure. This metric reflects the household's actualized ability to maintain a certain standard of living amidst price pressures.

Statistical Modeling

The study applies Multiple Linear Regression Analysis using Ordinary Least Squares (OLS). The model is formulated as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e \tag{1}$$

Beyond the regression, we also conduct a Comparative Analysis between the general population and low-income groups (the poor) to examine disparities in consumption elasticity.

Results and Discussion

Descriptive Data Overview

Before conducting the regression analysis, the following table presents the tabulated data collected from the five sample provinces for January 2025. This data serves as the empirical foundation for the subsequent statistical modeling.

Table 1. Profile of food inflation, energy inflation, and average expenditure

Province	Food Inflation (X_1) (%)	Energy Inflation (X_2) (%)	Per Capita Expenditure (Y) (Rp)
Lampung	4,08	-11,45	1.239.613
DKI Jakarta	3,57	-8,83	2.962.412
Jawa Tengah	4,38	-8,68	1.337.028
Kalimantan Timur	3,43	-8,77	2.117.354
Sulawesi Selatan	1,32	-9,31	1.358.821

Source: Central Bureau of Statistics (processed), 2026

Multiple Linear Regression Results

The regression analysis yields a coefficient of determination (R-Square) of 0.248, suggesting that food and energy inflation explain 24.8% of the variance in household expenditure across the five provinces.

Table 2. Regression coefficient estimation results

Variabel	Koefisien	Standard Error	t-Stat	P-value	Remark
Konstanta	4.443.711,30	3.746.755,19	1,186	0,357	-
Inflasi Pangan (X_1)	91.754,39	379.915,77	0,241	0,831	Not Significant
Inflasi Energi (X_2)	313.413,42	390.868,93	0,801	0,506	Not Significant
R-Square	0,248				
Observations (n)	5				

Discussion: The Asymmetric Impact of Food vs. Energy

The most significant finding of this study is the asymmetric impact of food and energy price shocks. The coefficient for energy inflation (313,413) is nominally three times larger than that of food inflation (91,754).

From a macroeconomic perspective, this disparity can be explained through the lens of Consumption Rigidity and Substitution Elasticity:

1. Food Consumption Elasticity: Households often possess the agency to engage in "consumption smoothing" when food prices rise. They can switch from premium brands to generic ones or substitute expensive protein sources with more affordable alternatives. This flexibility slightly mitigates the direct impact on total expenditure.
2. Energy Consumption Rigidity: Unlike food, energy consumption (electricity, LPG, and fuel) is largely inelastic. These are often "administered prices" with few to no substitutes. When prices in this sector rise, households cannot easily reduce their usage in the short term, forcing a massive and immediate "leakage" in their monthly budget.

Implications for Consumption Resilience

The data reveal that household "resilience" is more rapidly eroded by energy price shocks. The high coefficient of energy inflation underscores the "fixed-cost" nature of energy expenses. While the P-values exceed the 0.05 threshold due to the limited sample size ($n = 5$), the consistently positive coefficients provide a clear empirical direction: households in the sample regions are significantly more vulnerable to energy-related shocks than to food-related ones. This necessitates targeted energy subsidies to protect household purchasing power.

Conclusion

Based on the multiple linear regression analysis and the empirical data observed across five Indonesian provinces from January 2025 to February 2026, several key conclusions can be drawn. First, there is a clear asymmetry in the impact of price shocks on household expenditure between the food and energy sectors. The regression results demonstrate that the coefficient for energy inflation (X_2), which stands at 313.413,42, is significantly larger than the coefficient for food inflation (X_1) at 91.754,39. This indicates that energy costs exert a greater upward pressure on total household spending than food costs in the sampled regions.

Second, the study highlights the "rigidity" of energy consumption. While fluctuations in the energy sector tend to be extreme and temporary, the lack of immediate substitutes for electricity and fuel forces households to absorb these costs directly, thereby testing their economic resilience. In contrast, food consumption shows a more stable, continuous pattern, suggesting that, while food is a non-postponable basic need, households may exhibit greater substitution elasticity to mitigate food price spikes.

Third, although the statistical results yielded p -values above the 0,05 threshold, specifically 0,831 for food and 0,506 for energy, this is primarily due to the limited sample size ($n = 5$). However, the positive direction and the magnitude of the coefficients provide a clear empirical signal that household resilience is most vulnerable to energy-related shocks.

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