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ECONOMIC AND SOCIAL INFLUENCE ON HOUSEHOLD PRODUCERS IN LAMPUNG PROVINCE IN 2024

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Abstract

This study aims to analyze the influence of economic and social factors on household expenditure in Lampung Province using a quantile regression approach. The data used is from Susenas 2024, including the variables of per capita income, the education level of the head of household, and the area of residence. The results of the analysis show that the influence of the three variables is heterogeneous throughout the distribution of expenses. Per capita income has a negative and significant effect on the lower quantile, indicating a tendency to save or consume limited in low-income households. In contrast, education shows a positive and increasingly greater influence on the upper quantile, confirming the role of education in increasing consumption capacity. The area of residence also has a significant effect, where households in urban areas tend to have higher expenditures than rural areas. These findings confirm the importance of the quantile regression approach in understanding the dynamics of household consumption more comprehensively, as well as encouraging the formulation of more inclusive development policies based on local characteristics.

Keywords: Household Expenditure, Quantile Regression, Education, Income, Region

1. Introduction

Household consumption expenditure has consistently been the main driver of the Indonesian economy, with a stable GDP contribution above 50% throughout 2023 to the third quarter of 2024. The figures were recorded at 53.34% (TW II 2023), 52.64% (TW III 2023), rising to 54.53% (TW II 2024), and 53.08% (TW III 2024). This confirms the central role of households in driving national economic growth (BPS, 2025) The dominance of household consumption shows that people's purchasing power has a great influence on the running of the economy. When consumption is strong, demand for goods and services strengthens, thus boosting production, distribution, and other economic activities. Conversely, weakening consumption can directly slow economic growth (Song, 2024)

Household spending cannot be separated from consumer behavior theory, one of which is the Engel Curve. This model explains that when income increases, the percentage of spending on basic needs such as food tends to decrease, while the proportion for secondary and tertiary needs, such as education and recreation, increases. This shift in consumption patterns emphasizes the role of households as drivers of social and economic transformation (Chai et al., 2023).

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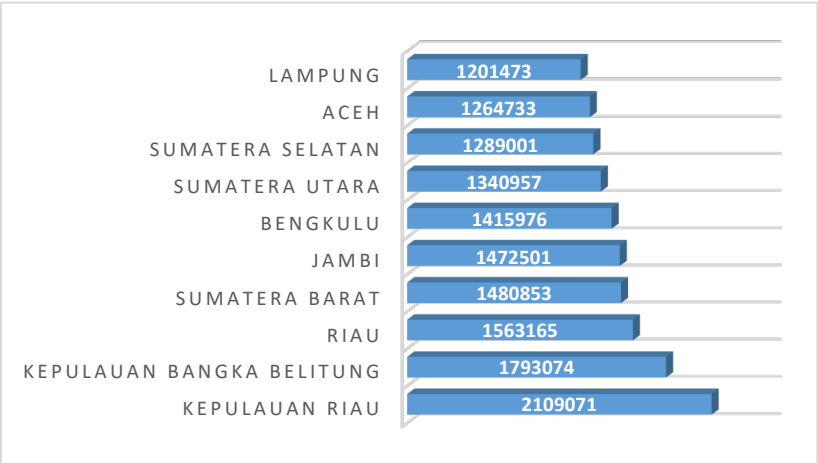

Figure 1. Lowest Average Per Capita Expenditure in Sumatra in 2024 (Rupiah)
Source: BPS (2025)

The figure above shows the inequality of purchasing power between provinces on the island of Sumatra, where Lampung occupies the lowest position with an average per capita expenditure of Rp1,201,273 per month. This low figure not only reflects income limitations, but also shows structural challenges in driving productive consumption that can accelerate local economic growth (Andriani, 2023). Within the framework of the Engel Curve, this condition indicates that most households in Lampung are still at the stage of basic consumption, so the potential to drive demand for the education, recreation, and other public services sectors is not optimal.

The implication is that policy interventions need to be directed at improving the quality of human resources, creating more diverse jobs, and expanding access to public services. Thus, the transformation of household expenditure can be an entrance for improving regional economic structures and strengthening regional competitiveness (Li et al., 2023). Low household expenditure cannot be separated from economic variables such as limited per capita income, as well as social factors such as education level and characteristics of residential areas. Economically, per capita income is the main indicator of people's purchasing power, where increased income encourages higher consumption (Sasana, 2012). Keynes' theory states that an increase in income will increase consumption because individuals have more resources to meet their needs (Davidson, 2011). In the social context, education plays a role as an investment in human capital that increases productivity and household income (Psacharopoulos & Patrinos, 2018);Galiakberova, 2019). Households with higher levels of education tend to have more complex and diverse consumption patterns (Crespo Cuaresma et al., 2018). Geographic location also affects household spending. Urban areas with high accessibility and adequate infrastructure drive greater consumption than rural areas, where differences in the cost of living and access to public services are important determinants in the spending structure. (Pramana, 2018).

However, empirical results related to the influence of per capita income, education, and area of residence on household expenditure have not been consistent. Several studies have shown a positive and significant relationship (Soleh et al., 2023; Yanti & Murtala, 2019), while others find insignificant or even negative influences (Aprinai et al., 2024); Tilome & Poiyo, 2022). In addition, the dominant statistical approach still uses classical linear regression, which only captures the influence of the average and has not been able to uncover the heterogeneity of consumption behavior across different spending groups.

In the context of Lampung Province, studies that link economic and social variables with the quantile regression approach are still very limited. Meanwhile, geographical differences between urban and rural areas and inequality of access to public services also significantly affect household consumption patterns (Mar'ah & Ismail, 2020). Therefore, this study aims to fill this gap by analyzing the influence of socio-economic characteristics on household expenditure on various quantities of consumption distribution, in order to obtain a more comprehensive, systematic, and relevant understanding for regional economic development policy formulation.

2. Theoretical Background

2.1 Concept of Household Production

Household expenditure refers to the total market value of goods and services purchased by households to meet their needs and wants, both in the form of durable and non-durable goods. In macroeconomics, household consumption accounts for the largest share of GDP final use, with a portion of about 50%. Therefore, this indicator is crucial in analyzing aggregate demand and fiscal policy design. Changes in household spending are also often used as an early sign of a change in the business cycle and economic stability of a country (Christian Matthes & Schwartzman, 2021).

2.2 Per Capita Income

Keynesian theory asserts that household consumption is directly influenced by the actual level of income received by an individual or household in a given period. Per capita income is the main indicator that represents a person's economic capacity to meet consumption needs. According to Keynes (1936), an increase in income will encourage an increase in household consumption, although not proportionately, because a portion of the additional income will be saved (Tapsin & Hepsag, 2014).

Mathematically, the relationship between per capita income and household consumption can be written with the equation:

$$C = a + bY$$

Information:
C : Household Consumption
a : Autonomous expenditure, i.e., minimum consumption even without income
b : Marginal Propensity to Consume (MPC)
Y : Per capita income

The main implication of this theory is that households with higher per capita incomes tend to have greater consumption expenditures, both on basic and non-basic needs. Therefore, in many empirical studies, per capita income is often used as a primary predictor in household spending models.

2.3 Education of the Head of Household

Education plays an important role in determining household capacity, highly educated individuals have better financial literacy and cognitive ability to choose economically and socially value-added goods and services (Madudova & Corejova, 2024). Within the framework of Human Capital Theory, education is seen as an investment in human capital that increases individual productivity and capacity. Education raises awareness of productive consumption such as spending on health, children's education, and long-term investments, as well as encouraging efficient consumption oriented towards long-term well-being(Gu & Wong, 2015). The unequal investment of human capital increases the

welfare gap. Education as an instrument of human capital formation has a direct impact on the quality of life, job opportunities, and household spending patterns (Nizar & Nazir, 2020). Education for heads of households is the main predictor of spending, with a Human Capital approach that sees education as productive capital to increase work productivity, access to formal jobs, and purchasing power.

Theoretically, the influence of education on well-being can be described in the function of household economic utility as follows:

$$W = f(E,X)$$

with:
W = household well-being or expenditure
E = education level of the head of household
X = other control variables such as age, number of family members, and location

In the development of quantitative models, the contribution of education to household expenditure is often represented in linear regression or quantile regression models, which allow us to observe how the effects of education vary in households with different levels of consumption.

2.4 Regency/City Areas

The location of residence affects household spending through price differences, access to services, and the structure of the local economy. Urban households tend to have higher spending, especially on transportation and recreation, in line with the Accessibility Theory which emphasizes the importance of easy access to basic services (Weitzel, 2024).

Limited access to energy, technology, and natural resources in certain areas causes households to spend more on basic needs (Reddick et al., 2020). Thus, location and accessibility level are the main factors in determining the efficiency of household expenditure

3. Methods

3.1 Types of Research

This study uses a quantitative descriptive approach to evaluate the influence of economic and social characteristics on the level of household expenditure in Lampung Province. Quantitative methods were applied to systematically and objectively identify the relationships between variables, with statistical analysis used to test the significance of each variable's contribution to household spending.

3.2 Data Sources

This study uses cross-section data for Susenas 2024 Lampung Province organized by BPS. The data includes household characteristics such as the education of the head of household, the location of residence, and total household expenditure. The unit of analysis is household, with a quantile regression approach. In addition, per capita income data is calculated independently of GDP divided by population to enrich the analysis

3.3 Variable Operations

Table 1. Variable Operations

Variable	Indicators	Scale	Data Source	Role in Analysis
Per capita income (X1)	Total GDP divided by the number of people in a region	Ratio	Susenas (processed)	Independent Variables

Variable	Indicators	Scale	Data Source	Role in Analysis
Head of Household Education (X2)	Last Education Level (Elementary, Junior High, High School, etc.)	Ordinal	Aftermath	Independent Variables
Residence Area (X3)	Region (1 = City 0 = Regency	Nominal	Aftermath	Independent Variables
Household Expenditure (Y)	Total Monthly Household Expenditure	Ratio	Aftermath	Dependent variable

3.4 Data Analysis Methods

In this study, the data analysis methods applied included descriptive statistics as well as quantile regression, which were processed using the StataMP17 software. The stages of the research implementation are detailed as follows:

1) Carry out descriptive statistical analysis and data exploration to obtain an overview and summary of the characteristics of the research data.
2) Perform a Heteroscedasticity Test to detect residual variance inequality between observations. This study uses the White Test because it is general and does not depend on the assumption of normality, so it is suitable for quantile regression. This test regresses the squared residual to independent variables and their interactions, in order to identify violations of the classical assumption of OLS. A formal way to detect the presence or absence of heteroscedasticity in regression models is to use the White test. Consider the following equation:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_p X_{pi} + \varepsilon i$$

Several steps can be taken to perform the White test based on the regression model mentioned above:

a. The regression model estimate will produce an error value, namely $\hat{\varepsilon}_i^2$
b. Create a Regression Equation

$$\hat{U}_i^2 = a_0 + a_1 X_{1i} + a_2 X_{2i} + a_3 X_{1i}^2 + a_4 X_{2i}^2 \ldots + a_p X_{pi}^2 + \varepsilon_i$$

This test assumes that the error variant is a function of the relationship between the free variables, the squares of each free variable, and the interaction between the free variables.

c. Hypothesis formulation:
H_0 : show that the regression model does not show a heteroscedasticity problem;
H1: shows that the regression model shows a heteroscedasticity problem
d. Sample size n and coefficient of determination R^2 obtained from the regression will be followed by a Chi-Square distribution with the free degree of the number of free variables or the number of regression conferences outside the intercept. Therefore, the White test formulation is: $nR^2 = X^2$ If the calculation value exceeds the critical value by α chosen, it was decided that there was no heteroskedasticity. This is because α1 = α2 = α3 = α4 = 0 until (constant)$\hat{U}_i^2 = a_0$

3) Detecting Outliers

In order to improve the validity of parameter estimation in quantile regression, outlier identification and influential observation are crucial steps in the diagnostic stage of the model (Sánchez et al., 2021). In this study, the boxplot method is used to determine outliers, In descriptive statistics, boxplots are a way to describe numerical data

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graphically. Boxplots can also convey information about variations and placements or locations of data, especially to find and show changes in variation and location between different data groups (Kurniadi et al., 2018). Using this method, the values of quartiles 1, 2, and 3 will divide the data sequence into four parts. The range or Interquartile (IQR) is the difference between Quartile 1 and Quartile 3, or IQR = Q3 − Q1. A value is considered an outlier if:

$$Q3+(1.5 \times IQR) < Outlier \leq Q3 +(3 \times IQR)$$

Or

$$Q1-(1.5 \times IQR) > Outlier \geq Q1 +(3 \times IQR)$$

The schematic image of the Boxplot method is as follows:

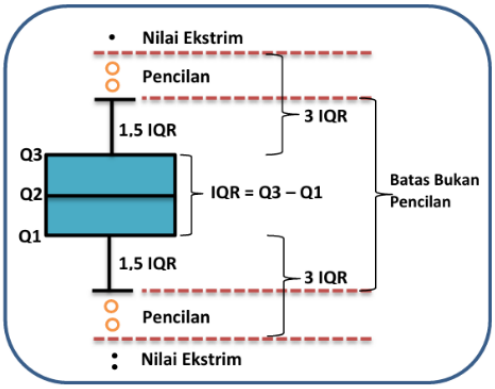
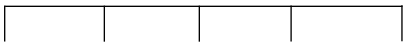


Figure 2. Isolation identification scheme using boxplot

4) Quantile Regression Model

Quantiles are values that divide a series of data that has been sorted into equal parts. The quantiles that divide the sequenced data into two parts are called the median, into four parts called the quantiles (Q1, Q2, Q3), into ten parts called deciles (D1, D2, … D9), and being a hundred parts is called percentile (P1, P2,…, p99) (Sahab, 2019)



Xmin Q1 Q2 Q3 Xmax

Quantile regression is a regression approach commonly used in econometrics to analyze the relationship between predictor variables and responses at different levels of the quantile distribution. This technique arranges the data in a specific order, so that the quantiles can be defined as simple optimization problems (Widodo & Andani, 2016). Unlike classical linear regression which only models conditional means, quantile regression allows analysis on heterogeneous data. This method was introduced by Koenker and Basset (1978) as a development of linear regression, and is particularly useful in cases of abnormal distributions, inconstant variances, long-tail distributions, or truncated data. In addition, quantile regression is effective in estimating parameters in different data groups and has resistance to outliers (Puspita, 2015). Quantile regression specifies the conditional quantity of the linear function of the quantile regression equation: $q_\tau Y_i X_{i1}, \dots, X_{ip} Y_i Y_i X_{i1}, \dots, X_{ip}$

$$EXPEND_{i\tau} = \beta_{0,\tau} + \beta_{1,\tau}(PCI)_i + \beta_{2,\tau}(EDU)_i + (REGION)_i + \varepsilon_{i,\tau}$$

Where: $EXPEND_{i\tau}$ = Household Expenditure (Rupiah)

$(PCI)_i$ = Per Capita Income (Rupiah)

$(EDU)_i$ = Head of Household Education (Ordinal)

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$(REGION)_i$ = Region Variable Dummy (Nominal)
β_τ = Parameter estimation on the quantile to τ
$\varepsilon_{i,\tau}$ = The remainder to the quantile to $i\tau$
i = ..., $n\,j$ =*1*,.....,*p*

In matrix equations

$$\begin{bmatrix} Y_{1,\tau} \\ Y_{2,\tau} \\ \vdots \\ Y_{n,\tau} \end{bmatrix}_{n\times 1} = \begin{bmatrix} 1 & X_{11} & \cdots & X_{1p} \\ 1 & X_{21} & \cdots & X_{21} \\ \vdots & \vdots & \vdots & \vdots \\ 1 & X_{n1} & \cdots & X_{np} \end{bmatrix}_{n\times(\mathrm{p}+1)} \begin{bmatrix} \beta_{0,\tau} \\ \beta_{1,\tau} \\ \vdots \\ \beta_{p,\tau} \end{bmatrix}_{n\times 1} + \begin{bmatrix} \varepsilon_{1,\tau} \\ \varepsilon_{2,\tau} \\ \vdots \\ \varepsilon_{n,\tau} \end{bmatrix}_{n\times 1}$$

$$\boldsymbol{Y} = \boldsymbol{X\beta} + \boldsymbol{\varepsilon}$$
$$\boldsymbol{\varepsilon} = \boldsymbol{Y} - \boldsymbol{X\beta}$$

5) Coefficient Determination Test

The determination coefficient test is used to determine the extent to which independent variables are able to explain the variations that occur in dependent variables in multiple linear regression models. Meanwhile, in quantile regression, the measure used is Pseudo R^2(Koenker & Machado, 1999). The Pseudo R^2 value can be calculated using the following equation:

$$R^2(\tau) = 1 - \frac{\sum y_i \geq \hat{y}i\,|y_i - \hat{y}_i| + \sum y_i \geq \hat{y}_i(1-\tau)|y_i - \hat{y}_i|}{\sum y_i \geq \bar{y}_i\,|y_i - \bar{y}_i| + \sum y_i \geq \bar{y}_i(1-\tau)|y_i - \bar{y}_i|}$$

Where is the 1-τ quantile that corresponds to the observation, while it is the value of the corresponding model interception$\hat{y}_i = \alpha_\tau + \beta_\tau xi\bar{y}_i = \beta_\tau$

4. Results and Discussion

4.1 Descriptive Analysis

Descriptive statistics serve to provide an overview of the characteristics of the variables analyzed in the study. The information is presented briefly in Table 2 which contains descriptive statistics from each research variable.

Table 2. Descriptive Statistics of Research Variables (N = 10,463)

Variable	Mean	Std. Deviation	Min	Max
EXPEND	4261351	3190650	407797.6	9.26e+07
PCI	2379040	572249.3	1514832	3372615
EDU	7.995412	5.555956	0	24
REGION	.1288349	.3350332	0	1

Source: Processed data (2024)

The descriptive statistical table above presents a summary of the data characteristics for the four main variables in the study with a total of 10,463 observations, the household expenditure variable shows an average expenditure of Rp4,261,351 with a standard deviation of Rp3,190,650, and a very high maximum value (Rp92,600,000), indicating an outlier in the distribution of expenditure. Per capita income has an average of Rp2,379,040 and a standard deviation of Rp572,249.3, with a relatively narrow range of values compared to the previous variable, reflecting a more concentrated income distribution. Education showed an average length of education of 7.99 years with considerable variation, from 0 to 24 years, indicating the heterogeneity of the respondents' education levels. Meanwhile, the region as a dummy variable had an average of 1.13 and a standard deviation of 0.34, indicating a relatively balanced distribution between the observed region categories. This narrative provides a basic basis for understanding the pattern of data distribution before further inferential analysis is carried out.

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4.2 Heteroskedasticity Test

The heteroskedasticity test in this study was conducted using the White Test, as shown in Table 3.

Table 3. White Test Results for Heteroskedasticity

Test	Chi-Square Statistic	p-value	Conclusion
White Test	178.22	0.0000	Heteroskedasticity is present

Source: Processed data (2024)

The test results show a chi-square statistical value of 178.22 with a p-value of 0.0000. Since the p-value (0.0000) < α (0.05), the null hypothesis (H_0) that the residual variance is constant is rejected. Therefore, it is concluded that there are symptoms of heteroskedasticity in the regression model used, justifying the use of robust methods like quantile regression.

4.3 Outlier Detection

Outlier detection was performed on the household expenditure variable. The boxplot visualization in Figure 1 illustrates the distribution.

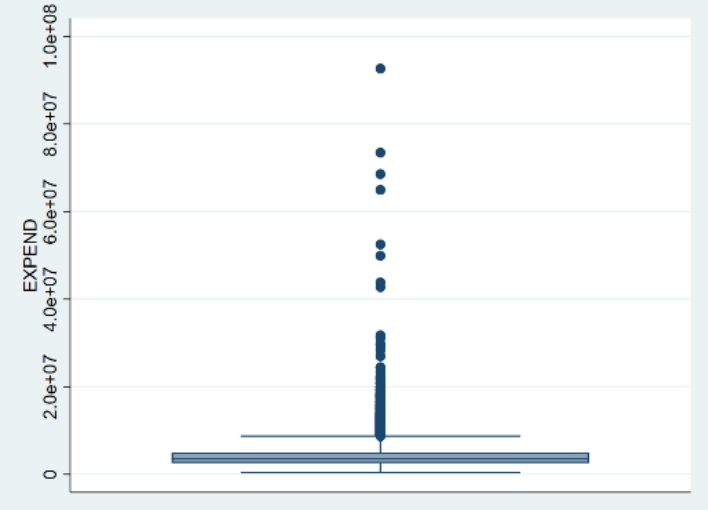

Figure 1. Boxplot of Household Expenditure in Lampung Province

Source: Processed data (2024)

Figure 1 shows a right-skewed distribution of household spending, with the majority of data concentrated at lower values and a number of extreme outliers on the higher end. The median is close to the lower limit of the interquartile range (IQR), indicating that most households have spending below the distribution midpoint. The numerous points above the upper whisker confirm the existence of very high-spending households that deviate significantly from the general pattern. This pattern underscores expenditure inequality among households and reinforces the need for robust analytical methods like quantile regression to handle distortions caused by outliers and non-normal distributions.

4.4 Quantile Regression Analysis

The quantile regression model for the household expenditure variable (EXPEND) was estimated across five quantiles (τ = 0.10, 0.25, 0.50, 0.75, 0.90). Table 4 presents the regression results for each quantile.

Table 4. Quantile Regression Results for Household Expenditure

Variables	τ = 0.10	τ = 0.25	τ = 0.50	τ = 0.75	τ = 0.90
PCI	-0.050*	-0.071**	-0.074*	-0.106	-0.087
	(0.029)	(0.032)	(0.039)	(0.065)	(0.118)

Variables	τ = 0.10	τ = 0.25	τ = 0.50	τ = 0.75	τ = 0.90
EDU	79,779.123***	85,997.226***	115,052.602***	178,020.238***	263,462.761***
	(2,965.713)	(3,263.478)	(3,975.244)	(6,725.130)	(12,177.944)
REGION	961,987.188***	1,275,908.409***	1,713,970.072***	2,271,949.971***	2,870,995.129***
	(51,551.274)	(56,727.150)	(69,099.371)	(116,899.053)	(211,682.162)
Constant	1,405,564.208***	2,024,382.291***	2,707,304.547***	3,635,252.028***	4,677,473.950***
	(71,958.317)	(79,183.111)	(96,452.989)	(163,174.612)	(295,478.480)
Observations	10,463	10,463	10,463	10,463	10,463

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1*
Source: Processed data (2024).

The results show differential effects across quantiles, indicating that socioeconomic factors do not have a uniform impact across the expenditure distribution.

1) Per Capita Income (PCI): This variable has a negative coefficient across quantiles and is significant in the lower to middle quantiles (τ = 0.10–0.50). This suggests that an increase in per capita income is associated with a slight decrease in spending among low- to middle-income households. This phenomenon may indicate precautionary saving behavior or a tendency to save in groups with limited economic mobility. In the upper quantiles (τ = 0.75–0.90), the effect of PCI is not significant, indicating that for high-spending households, income variation does not directly influence consumption levels.
2) Education of Head of Household (EDU): This variable has a positive and significant effect across all quantiles. Each additional year of education increases household spending consistently, with a stronger effect in higher quantiles (from Rp79,779 at τ=0.10 to Rp263,462 at τ=0.90). This demonstrates that education plays a crucial role in expanding economic capacity and consumption preferences, especially among high-income households with access to non-essential goods and services.
3) Region of Residence (REGION): This variable also has a significant positive effect across all quantiles, with the coefficient value increasing from 0.96 million at τ=0.10 to 2.87 million at τ=0.90. This confirms the expenditure disparity between urban and rural households, where households in urban areas tend to have substantially higher expenditures, likely due to higher living costs and more modern, diverse consumption patterns.

4.5 Coefficient of Determination

Each quantile regression model has its own pseudo R^2 value, which indicates the model's goodness-of-fit. Table 5 presents the pseudo R^2 for each estimated quantile.

Table 5. Pseudo R^2 for Each Quantile Regression Model

Quantile (τ)	0.10	0.25	0.50	0.75	0.90
Pseudo R^2	0.0785	0.0761	0.0912	0.1198	0.1574

Source: Processed data (2024).

The pseudo R^2 value increases from 0.0785 (τ=0.10) to 0.1574 (τ=0.90). This trend suggests that the model's explanatory power improves for households with higher expenditures. In other words, the combined influence of income, education, and region is stronger in explaining spending variations among high-expenditure households, whereas these factors have a weaker explanatory power for low-expenditure households.

4.6 Discussion

The findings from the quantile regression analysis provide a nuanced understanding of household expenditure determinants that would be masked by ordinary least squares (OLS) regression. The negative relationship between per capita income and expenditure

in lower quantiles aligns with theories of precautionary savings, where households with lower and more uncertain incomes prioritize saving over consumption to buffer against future shocks (Deaton, 1992). This behavior is particularly relevant in developing economies where social safety nets are often limited.

The strong, positive, and increasing effect of education across all quantiles underscores human capital's role in shaping economic behavior. Education not only increases earning potential but also alters consumption preferences and access to information, leading to higher expenditures on quality goods, services, and investments in health and education for the next generation (Schultz, 1961). The magnified effect in higher quantiles suggests that education's marginal return on consumption sophistication is greatest among wealthier households.

The significant and substantial effect of the region dummy variable highlights the profound impact of geography and urbanization on living standards and consumption patterns. The urban-rural expenditure gap, which widens across quantiles, reflects not only differences in price levels but also in access to diverse markets, services, and modern lifestyles (World Bank, 2022). This points to structural inequalities embedded in spatial development.

The increasing explanatory power (pseudo R^2) of the model from lower to upper quantiles indicates that the spending behavior of higher-income, urban, and more educated households is more systematically influenced by these measured socioeconomic factors. Conversely, the expenditure of poorer households is likely governed by a more complex set of constraints, including informal credit, subsistence needs, and local idiosyncrasies, which are not captured by the model.

From a policy perspective, these results argue for targeted interventions. For lower-expenditure households, policies should focus on income stabilization and strengthening social protection to reduce precautionary saving motives and stimulate basic consumption. For all households, investment in education remains a powerful tool for long-term economic empowerment. Furthermore, addressing the urban-rural divide through infrastructure development and equitable service provision is crucial for reducing geographical disparities in welfare and consumption opportunities.

5. Conclusion

This study examines the influence of economic and social characteristics on household expenditure in Lampung Province with a quantile regression approach. The results of the analysis show that the influence of independent variables is not homogeneous across the distribution of expenditure. Per capita income has a negative and significant effect on the lower to middle quantile, but not significantly on the upper quantile, indicating the existence of different consumption behaviors between household groups. In contrast, the education of the head of household showed a positive and significant influence across the quantile, with an increasingly large effect on the high quantile, confirming the role of education as a driver of consumption capacity and well-being. The variables of the residential area also had a significant positive effect, reflecting the disparity in consumption between households in urban and rural areas.

These findings reinforce the urgency of the quantile regression approach in socio-economic analysis, as it is able to capture the heterogeneity of consumption behavior that is not detected by classical linear regression. The implication is that regional economic development policies need to be designed in a more segmented manner, taking into account the characteristics of households at various levels of expenditure. Improving the

quality of education, equitable access to public services, and strengthening local economic capacity are key strategies in encouraging inclusive and sustainable household consumption transformation.

The nuanced findings from quantile regression provide critical insights for evidence-based policymaking. The negative relationship between income and expenditure at lower quantiles suggests that low-income households practice precautionary saving, possibly due to economic uncertainty and limited access to formal credit markets. This behavior indicates that simple income enhancement programs may not immediately translate to increased consumption among the poorest households without complementary social safety nets.

The progressively stronger effect of education across expenditure quantiles reveals an important stratification in returns to human capital investment. While education universally improves consumption capacity, its transformative potential is maximized among households that have already achieved higher economic status. This suggests that educational interventions must be coupled with other economic empowerment programs to create synergistic effects.

The persistent urban-rural expenditure gap, which widens across quantiles, points to structural inequalities in regional development. Urban households benefit from better infrastructure, market access, and employment opportunities that facilitate higher consumption levels. This disparity requires targeted rural development strategies that go beyond basic infrastructure to include digital connectivity, market linkages, and value-chain integration.

From methodological perspective, this study demonstrates that quantile regression provides superior analytical capabilities compared to conventional mean-based approaches when examining heterogeneous populations. The ability to detect varying effects across different points of the expenditure distribution allows for more precise identification of policy targets and intervention points. Future research could expand this analysis by incorporating additional variables such as household composition, access to financial services, and exposure to economic shocks to develop a more comprehensive understanding of expenditure determinants.

Ultimately, achieving inclusive economic development in Lampung Province requires policy interventions that recognize and respond to the diverse realities of different household groups. A combination of targeted social protection for vulnerable households, human capital development across all segments, and strategic regional development to reduce urban-rural disparities will be essential for promoting sustainable improvements in household welfare and consumption patterns. This layered approach, informed by sophisticated analytical methods like quantile regression, represents the most promising pathway toward equitable economic development in the region.

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