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THE EFFECT OF POPULATION, MINIMUM WAGE RATE, AND UNEMPLOYMENT RATE ON PER CAPITA EXPENDITURE IN THE REGENCIES/CITIES OF NORTH SUMATRA PROVINCE

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Abstract

Per capita expenditure is an important indicator reflecting the purchasing power and welfare of a country or region. This study aims to describe per capita expenditure in North Sumatra Province at the district/city level and analyze the influence of population, minimum wage, and unemployment rate on per capita expenditure across all districts/cities in North Sumatra Province in 2022. This study uses a quantitative method with a cross-sectional data regression model, accompanied by tests for normality, multicollinearity, heteroscedasticity, autocorrelation, and hypothesis testing. The results of the analysis indicate that the minimum wage level has a significant effect on per capita expenditure, while population and unemployment rate do not. The results of this study are expected to serve as a reference for local governments in formulating policies that support increased per capita expenditure, which ultimately contributes to encouraging consumption and driving the regional economy.

Keywords: *Minimum Wage, Per capita Expenditure, Population, Unemployment Rate.*

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INTRODUCTION

One of the main focuses of the Sustainable Development Goals (SDGs) is community welfare, which is an indicator of the government's success in national economic development (Sita, 2017). The most fundamental measure of a country or region's welfare is its economic level. The stronger a community's economy, the more likely it can meet its needs. A community is considered prosperous if the proportion of expenditure on basic needs is equal to or lower than that on non-basic needs. Conversely, households with higher expenditures on basic needs indicate a low level of welfare. This is consistent with research by Difino (2024), which states that food expenditure tends to decrease relative to total expenditure as income increases, and this proportion is also

influenced by demographic structure. A community's ability to meet its basic needs reflects economic interaction, which can be measured through indicators such as purchasing power and per capita expenditure.

Per capita expenditure is often used as an indicator of the economic well-being and standard of living of a country or region. Higher expenditure typically indicates better economic capacity and greater access to daily necessities, such as food, education, and healthcare. According to the Central Bureau of Statistics (2024), per capita expenditure is used to describe the level of welfare enjoyed by the population as a result of improving economic conditions. Average per capita expenditure reflects the community's standard of living, but not all regions are able to maintain their per capita expenditure levels. Inequality in per capita expenditure often reflects differences in economic structure and access to resources between regions (Yuliana, 2021). Overall per capita expenditure is based on household consumption expenditure, which is allocated for goods and services according to household daily needs within a certain period (Halim, 2012). Household consumption expenditure per capita is an important indicator for describing the level of community welfare and aggregate purchasing power (Beegle et al., 2016).

According to the Central Statistics Agency (2023), per capita expenditure is a measure set by the government to indicate the dimensions of a decent standard of living, which is part of the Human Development Index (HDI). A decent standard of living itself is a dimension of human quality of life, broadly describing the welfare enjoyed by the population as a result of the improving economy in a region (BPS, 2020). Per capita expenditure is influenced by various factors. The factors that most closely cover the area are household income, population size, and the quality of population composition, which is described by the unemployment rate. Population growth has direct implications for the level of public consumption, both in terms of the amount and type of expenditure (Schultz, 2015). The economic condition of a country depends on household consumption and household income. Household consumption includes autonomous expenditure, which occurs even in the absence of income. Keynes also assumes that if a person has a high consumption propensity, their income is spent on consumption, and if the consumption propensity is low, only a small portion of the income spent on consumption. There is a direct relationship between income and consumption expenditure. Understanding the relationship between income and consumption is inseparable from Modigliani's life cycle theory, in which individuals adjust their spending to their lifetime income expectations (Deaton, 2005). Income from household wages significantly influences consumption patterns, indicating that increases in income as the primary source of income also drive increases in consumption expenditure (Du, 2024). This is consistent with research by Attanasio and Pistaferri (2016), which states that household income is closely related to consumption expenditure, and changes in income directly affect people's consumption.

Per capita expenditure has a very strong relationship with income when viewed from an economic aspect, but apart from the economic aspect, demographic and employment aspects also influence per capita expenditure (Hasanah et al, 2021). As is known, in calculating per capita expenditure, population is the main dividing factor. For employment, the unemployment rate is an influential factor in consumption levels, which is measured by the level of per capita expenditure. High unemployment rates are typically negatively correlated with consumption levels due to reduced household purchasing power (Auerbach et al., 2021). High unemployment rates can negatively impact a region's economy, leading to a decline in purchasing power. Low incomes can indicate high unemployment rates, which can make it difficult for people to access goods and services and reduce their level of well-being.(Iqbal et al., 2018).

At the national and regional levels in Indonesia, numerous studies have examined the determinants of per capita household expenditure, inflation, GRDP growth, and

public spending as indicators of welfare. According to research by Sugiarto and Wibowo (2020), which used dynamic provincial panel data for 2010–2019, they found that Gross Regional Domestic Product (GRDP), previous household consumption, and local government spending significantly influenced per capita household final consumption expenditure; while inflation and the unemployment rate had a negative impact. Another study by Firdaus (2023) noted a regional convergence gap in per capita expenditure and educational inequality between districts/cities in Indonesia during the 2000–2017 period. Meanwhile, research by Saputri and Usman (2023) showed that partially, the provincial minimum wage had a positive and significant effect on the GRDP of North Sumatra Province, while inflation and population had a negative and positive but insignificant effect, respectively. However, simultaneously, these three variables together had a positive and significant effect on GRDP. This is reinforced by research by Panjaitan and Suharianto (2025), which states that the minimum wage and the workforce influence the unemployment rate in North Sumatra Province. These findings indicate that studies on the relationship between regional macroeconomic indicators such as the minimum wage, unemployment, and population with welfare, particularly per capita expenditure, are still developing and are relevant for further analysis in more specific regional contexts such as districts/cities. Furthermore, several previous studies have shown that per capita expenditure has a significant negative effect on poverty, while unemployment and other variables such as education, health, and government spending show varying effects depending on the region and research period (Munira & Juliansyah, 2022; Puteri & Marwan, 2023; Hidayat & Suherty, 2024).

North Sumatra is one of the most populous provinces in Indonesia, with a population of 15,588,500 (BPS North Sumatra, 2024), making it the fourth most populous province in Indonesia and the largest outside Java. The most populous provinces in Indonesia are presented in Table 1.

Table 1. Provinces with the Largest Populations in Indonesia in 2024

Order of -	Province	Population (People)
1	West Java	49,405,808
2	East Java	41,149,974
3	Central Java	37,032,410
4	North Sumatra	15,115,206
5	Banten	12,251,985
6	DKI Jakarta	10,679,951
7	South Sulawesi	9,225,747
8	Lampung	9,176,546
9	South Sumatra	8,657,008
10	Riau	6,614,384

Source: BPS Indonesia, 2024

North Sumatra is divided into 33 regencies/cities, each with its own distinct cultural context, impacting both short-term and long-term consumption. A high GDP does not necessarily reflect a high level of income for the community. There is concern that this could lead to inequality or economic equality, which could negatively impact the community, leading to lower per capita spending and ultimately lowering community well-being.

North Sumatra Province has 25 districts and 8 cities with different regional characteristics and potentials, so that policies that will affect people's income will also be different. As previously stated, income determines the amount of consumption expenditure, the greater the income, the more expenditure for consumption which also

calculates per capita expenditure, but the high level of income is not successful if it cannot be maximized by the community, due to the high unemployment rate so that the community cannot contribute to the economy of Sumatra itself. Although the Provincial Minimum Wage (UMP) of North Sumatra Province is relatively high where in 2024 the Provincial Minimum Wage (UMP) of North Sumatra Province is Rp 2,809,915 (two million eight hundred nine thousand nine hundred and fifteen rupiah) but the high unemployment rate will also hamper public consumption. The high unemployment rate where in 2023 the Open Unemployment Rate (TPT) of the Population Aged 15 Years and Over in 2023 in North Sumatra Province was 5.89% not only impacts individuals who lose their jobs, but can also affect the entire economy through a "multiplier effect". When many areas are unemployed, it will become a burden on the economy and reduce consumption which will directly reduce overall per capita expenditure, or the question is whether the high GRDP can be enjoyed by all people in the city districts in North Sumatra.

Per capita expenditure is an important indicator in measuring community welfare and is strongly influenced by factors such as per capita income, population, and unemployment rate, all of which have significant relationships to quality of life and human development (Darman & Rahayu, 2025). Although per capita expenditure has been recognized as an important indicator in measuring community welfare, most previous research has focused on the relationship between per capita expenditure and macroeconomic factors such as GDP growth or inflation at the national level, without examining in-depth variations between regions, particularly in provinces with diverse characteristics such as North Sumatra. Furthermore, few studies have comprehensively analyzed the relationship between population, provincial minimum wages, and unemployment rates on per capita expenditure at the district/city level. Understanding the influence of these three variables is crucial for formulating more inclusive and data-driven regional development policies. Therefore, this research fills this knowledge gap by exploring the influence of population, provincial minimum wages, and unemployment rates on per capita expenditure in North Sumatra.

Based on the description above, the author is interested in conducting research related to the influence of population, minimum wage levels, and unemployment rates on per capita expenditure in districts/cities in North Sumatra Province, where this research aims to understand the extent to which these variables influence consumption through per capita expenditure which will also describe the welfare of the community in districts/cities in North Sumatra Province.

METHODS

This research was conducted in the regencies and cities of North Sumatra Province and data collection was conducted at the agency related to this research, namely the Central Statistics Agency (BPS) of North Sumatra Province in 2022. The data used in this study is secondary data in the form of a Cross Section in 2022 in 34 regencies/cities of North Sumatra Province. This study aims to analyze the relationship between the variables of population (X1), minimum wage (X2) and unemployment rate (X3) on per capita expenditure (Y). The analytical method used in this study is quantitative analysis using multiple regression analysis. Multiple regression models are often used in economic studies to measure the extent to which independent variables influence the dependent variable simultaneously (Wooldridge, 2020). The multiple regression model used is to determine how much influence the independent variables (X1, X2, X3) have on the dependent variable (Y), or in an econometric model with the following regression equation (Gujarati & Porter, 2009):

$$Y = \alpha + \beta 1\ X1 + \beta 2\ X2 + \beta 3\ X3 + \mu \quad (1)$$

Where :

Y = Per capita expenditure variable (in rupiah units)
α = Constant
b = Regression Coefficient
X1 = Population Variable (in people)
X2 = Minimum Wage Variable (in rupiah per month)
X3 = Unemployment Rate Variable (in percentage units)

In the econometric approach, the principles of the relationship between economic variables are often explained theoretically using the basic framework of micro and macroeconomics (Mankiw, 2021).

RESULTS AND DISCUSSION

As explained in the introduction, this study aims to see the influence of variablespopulation, minimum wage and unemployment rate on per capita expenditurein the Regency/City of North Sumatra Province in 2022. The variable data in the study are presented in Table 2.

Table 2. Variable Data in Research

Regency/City	Variables			
	Per Capita Expenditure (Thousand Rupiah)	**Population (People)**	**Wages (IDR)**	**Unemployment Rate (%)**
Nias	7,196	149,249	2,560,336	2.81
Mandailing Natal	10,061	484,874	2,560,336	7.64
South Tapanuli	11,727	307,312	2,903,042	3.65
Central Tapanuli	10,495	374,734	2,830,884	7.97
North Tapanuli	11,892	318,424	2,564,054	1.07
Toba	12,475	212,133	2,701,117	1.39
Labuhan Batu	11,474	508,024	2,872,441	6.9
Sharpening	11,515	787,681	2,819,625	6.26
Simalungun	11,524	1,021,615	2,614,164	5.51
Dairi	10,740	315,460	2,522,609	0.88
Karo	12,554	414,429	3,078,762	2.71
Deli Serdang	12,657	1,953,986	3,188,592	8.79

Langkat	11,439	1,039,926	2,711,000	6.88
South Nias	7,195	373,674	2,522,609	3.69
Humbang Hasundutan	8,250	202,299	2,538,345	0.42
Pakpak Bharat	8,558	54,609	2,522,610	0.26
Samosir	8,991	139,337	2,522,609	1.16
Serdang Bedagai	11,499	667,998	2,869,292	4.98
Coal	10,755	416,367	3,191,571	6.21
North Padang Lawas	10,447	267,275	2,768,095	4.31
Padang Lawas	9,207	267,275	2,758,828	5.9
South Labuhanbatu	11,751	320,324	2,938,260	3.15
North Labuan Batu	12,258	390,954	2,869,293	3.75
North Nias	6,575	150,780	2,522,609	2.59
West Nias	6,152	91,346	2,522,609	0.53
Sibolga	12,135	90,366	3,006,826	7.05
Tanjung Balai	11,589	179,748	2,829,107	4.62
Pematangsiantar	12,744	274,056	2,523,361	9.36
High Cliff	13,144	177,785	2,565,424	6.39
Medan	15,503	2,494,512	3,370,645	8.89
Binjai	11,358	300,009	2,630,684	6.36
Padangsidimpuan	11,337	231,062	2,704,386	7.76
Gunungsitoli	8,434	137,583	2,610,348	3.65
North Sumatra	10,848	15,115,206	2,499,423	6.16

Source: BPS North Sumatra, 2022

The data above shows that several regencies/cities have per capita expenditures below the per capita income of North Sumatra Province, but there are also regions where per capita expenditures far exceed the provincial level. Medan City has the highest per capita expenditure, and South Nias Regency has the lowest.

Before the significance test of the influence of population size, wage level and unemployment rate on per capita expenditure is carried out, the classical assumptions will first be tested to ensure that the data meets the requirements for testing.

The normality test is used to determine whether a regression model has a normal distribution (Ghozali, 2018). According to the decision-making criteria, if the sig value is > 0.05, the data is normally distributed. If the sig value is < 0.05, the data is not normally distributed. The results of the data normality test are as follows:

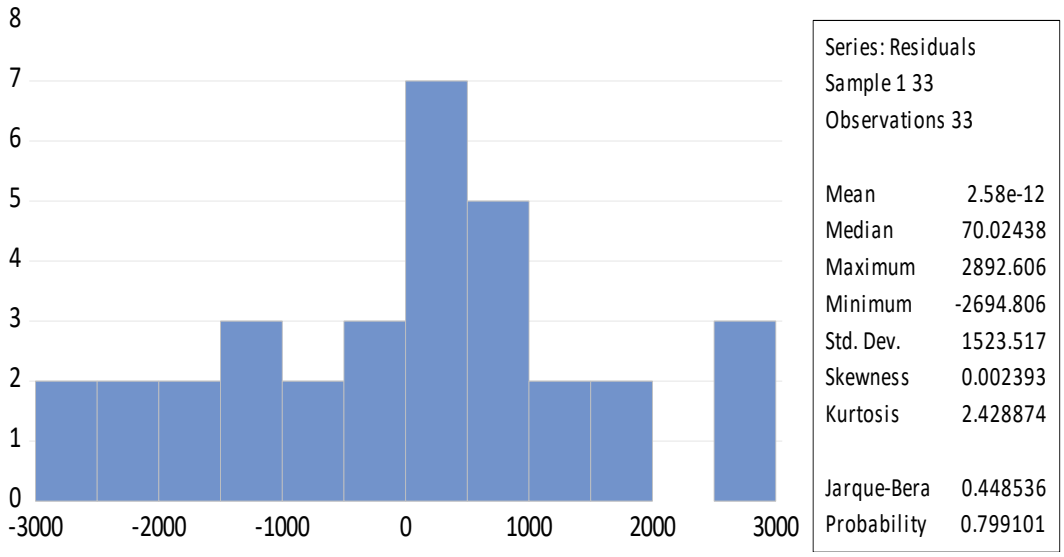

Figure 1. Normality Test Results
Source: Processed Data, 2025

The results of the Kolmogorov-Smirnov normality test show that the probability value is 0.799101 > 0.05, so the data is normally distributed.

Decision-making criteria, if the VIF value < 10, then it passes the multicollinearity test, if the VIF value > 10, then it does not pass the multicollinearity test. The results of the data multicollinearity test are presented in Table 3.

Table 3. Multicollinearity Test Results

	Coefficient	Uncentered	Centered
Variable	**Variance**	**VIF**	**VIF**
C	17429460	224.5696	NA
X1	5.37E-07	3.255413	1.802802
X2	2.60E-06	254.7095	1.696543
X3	15334.74	5.696908	1.422500

Source: Processed Data, 2025

The results of the multicollinearity test show that the VIF value of variable X1 is 1.802802 < 10, the VIF value of variable X2 is 1.696543 < 10 and the VIF value and variable X3 are 1.422500 < 10, so it can be concluded that there are no symptoms of multicollinearity or it passes the multicollinearity test.

Decision-making criteria If the sig value > 0.05 then it passes the Heteroscedasticity Test, If the sig value < 0.05 then it does not pass the Heteroscedasticity Test. The results of the Heteroscedasticity Test are as follows:

Table 4. Results of Heteroscedasticity Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4062.019	2445.571	1.660970	0.1075
X1	-1.99E-05	0.000429	-0.046421	0.9633
X2	-0.000960	0.000944	-1.016572	0.3178
X3	-51.37231	72.53983	-0.708195	0.4845

Source: Processed Data, 2025

The results of the Glejser heteroscedasticity test show that the probability value of variable X1 is 0.9633 > 0.05, the probability value of variable X2 is 0.3178 > 0.05 and the probability value of variable X3 is 0.4845 > 0.05, so it can be concluded that there are no symptoms of heteroscedasticity or it passes the heteroscedasticity test.

Decision-making criteria If the sig value > 0.05 then it passes the autocorrelation test, If the sig value < 0.05 then it does not pass the autocorrelation test. The results of the Autocorrelation Test are presented in Table 5.

Table 5. Breusch-Godfrey Serial Correlation LM Test Results

F-statistic	1.254541	Prob. F(2,27)	0.3013
Obs*R-squared	2.805905	Chi-Square Prob.(2)	0.2459

Source: Processed Data, 2025

The results of the Breusch-Godfrey Serial Correlation LM Test show that the Chi-Square Prob. value is 0.2459 > 0.05, so there is no autocorrelation problem or it passes the autocorrelation test.

The results of the Multiple Linear Regression Analysis processed with Eviews 12.0 can be shown as follows:

Table 6. Results of Multiple Linear Regression Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-718.3723	4174.860	-0.172071	0.8646
X1	0.000549	0.000733	**0.749287**	0.4597
X2	0.003708	0.001612	**2.300397**	0.0288
X3	212.6269	123.8335	**1.717038**	0.0966

Source: Processed Data, 2025

From the results above, it can be formulated as follows:

Y = -718.3723+ 0.000549*X1 + 0.003708*X2 + 212.6269*X3

The explanation is as follows:

a. The constant coefficient value is is -718.3723, this can be interpreted that without an increase in the population (X1), minimum wage level (X2) and unemployment rate (X3), the per capita expenditure variable (Y) will experience a decrease of 7,183.723%.

b. The beta coefficient value of the population variable (X1) is 0.000549 or 0.0549%, if the value of other variables is constant and the X1 variable increases by 1%, the per capita expenditure variable (Y) will increase by 0.054%, this reflects a weak positive relationship between population and per capita expenditure. Although the coefficient sign is in accordance with the theory that states that an increase in population tends to increase the average consumption of a region, this relationship is weak in the context of North Sumatra in 2022. This is likely due to the uneven distribution of income, the dominance of rural populations with low consumption levels, and the characteristics of the regional economy that do not allow population growth to have a significant impact on average per capita expenditure.
c. The beta coefficient value of the minimum wage variable (X2) is 0.003708 or 0.3708%. If the values of other variables are constant and the X2 variable increases by 1%, the per capita expenditure variable (Y) will increase by 0.3708%. This supports the theory that an increase in the minimum wage increases people's purchasing power and, in turn, encourages an increase in per capita expenditure (average consumption). This result is relevant to the economic concept that states that an increase in people's income, especially among low-income workers, will directly increase consumption, because this group tends to allocate a large portion of their income to meet daily needs. This result is in line with previous findings that an increase in the UMP has a direct impact on increasing household purchasing power and consumption (Wibisono & Yuliana, 2022). Thus, this positive and significant relationship is in accordance with the theory and reflects the effectiveness of the minimum wage increase policy in encouraging public consumption in North Sumatra.
d. The beta coefficient value of the unemployment rate variable (X3) is 212.6269 or 2.1262.69%. If the value of other variables is constant and the X3 variable increases by 1%, the per capita expenditure variable (Y) will increase by 2.1262.69%. In theory, the unemployment rate should have a negative effect on per capita expenditure, because increasing unemployment usually reduces people's income and purchasing power. However, this conflicting result can be caused by several factors, such as the existence of social assistance programs or government fiscal transfers that support household consumption, even though the unemployment rate increases. In addition, the contribution of the informal sector in supporting community spending can be another reason. Thus, although this result is not in accordance with the theory, it can be justified by local economic conditions or government policy interventions in the study area. Although theoretically unemployment reduces consumption, studies in Indonesia also show that this variable is not always statistically significant (Prasetyo & Handayani, 2020).
e. Hypothesis Test Results
   The decision making criteria according to Hamid et al (2020) are as follows:

Table 7. Heteroscedasticity Test Results

The calculated t value is positive	**Negative t-value**
t count > t table or sig. ≤ alpha	t count < -t table or sig. ≤ alpha
t count ≤ t table or sig. > alpha	t count ≤ t table or sig. > alpha

Source: Processed Data, 2025

Based on the decision-making criteria, the partial influence of the independent variable on the dependent variable is as follows:

a. The calculated t value of the Population Number variable (X1) is 0.749287 < the t table value of 2.04 and the Prob. value is 0.4597 ≥ 0.05, so Ha is rejected and Ho is accepted, meaning that the population does not affect per capita expenditure. This indicates that the population variable does not significantly affect per capita expenditure. This may occur because other factors, such as income distribution or other economic factors, have a greater influence on per capita expenditure than the population itself.
b. The calculated t value of the Minimum Wage variable (X2) is 2.300397 < the t table value of 2.04 and the Prob. value is 0.0288 ≤ 0.05, so Ha is accepted and Ho is accepted, meaning that the Minimum Wage has an effect on per capita expenditure. This shows that the minimum wage variable has a significant effect on per capita expenditure. This is in accordance with economic theory which states that increasing the minimum wage encourages an increase in people's purchasing power, which ultimately has a positive effect on consumption and per capita expenditure. The minimum wage can increase the consumption of the poor and reduce expenditure inequality (Flores et al., 2017).
c. The calculated t value of the Unemployment variable (X3) is 0.0966 < the t table value of 2.04 and the Prob. value is 0.0966 ≤ 0.05, so Ha is accepted and Ho is accepted, meaning unemployment has no effect on per capita expenditure. This shows that the unemployment rate variable does not have a significant effect on per capita expenditure. Although in theory the unemployment rate should have a negative effect on consumption, this result may be caused by other factors such as government social assistance or local economic dynamics that support consumption despite an increase in unemployment.
d. Test ResultsR-squared
   According to Sihabudin et al (2021), the decision-making criteria are if F count > F Table or sig. ≤ alpha, then accept Ha, If F count ≤ F Table or sig. > alpha, then accept Ho.

Table 8. R-Squared Test Results

R-squared	0.469874
Adjusted R-squared	0.415033
SE of regression	1600.381
Sum squared residual	74275369
Log likelihood	-288.1669
F-statistic	8.567988
Prob(F-statistic)	0.000315

Source: Processed data, 2025

The calculated F value is 8.567988 > F Table which is 2.93 and the sig. value is 0.000315 ≤ 0.05 Ho is rejected and Ha is accepted, meaning that the population (X1), minimum wage level (X2) and unemployment level (X3) affect per capita expenditure (Y).

CONCLUSION

Based on the data analysis, this study concludes that the minimum wage has a significant and positive effect on per capita expenditure in regencies and cities in North Sumatra Province in 2022, while population and unemployment rates do not show a statistically significant impact. These findings indicate that wage policies are an important instrument in increasing household consumption and, ultimately, regional economic growth.

The implication of this result is that local governments should consider strengthening minimum wage policies as a means of boosting purchasing power and reducing economic disparities between regions. Although population and unemployment rates do not show a significant effect in this study, future research should explore their indirect roles through other mediating variables, such as education, informal employment, or household savings behavior.

Further studies are recommended to examine longitudinal data and incorporate additional variables such as inflation, household income inequality, or social protection programs to better understand the complexity of factors influencing per capita expenditure. These insights are essential to design more inclusive and evidence-based regional development policies that target both income generation and expenditure capacity across diverse regions.

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