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# The Effect Of Economic Growth, Local Revenue And Population On Capital Expenditure

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**Abstract**

The aim of this research is to determine the influence of economic growth, local revenue and population on capital expenditure in the city region of North Sumatra Province in 2009-2023. The type of research used is quantitative using secondary data sourced from the Central Statistics Agency (BPS) with Cross Section 8 Cities and the observation range is 2009-2023. The type of research used is quantitative research which is mathematical in nature and uses systematic formulas. The type of data in this research is secondary data using panel data regression method with Common Effect Model which ranges from 2009-2023 and 8 Cities of North Sumatra Province. The results showed that economic growth and local revenue had a positive and significant effect on capital expenditures in the city areas of North Sumatra Province, while population had a positive but insignificant effect on capital expenditures in the city areas of Sumatra Province in 2009-2023.

**Keywords**: Economic Growth; Local Revenue; Population And Capital Expenditure

## 1. Introduction

Capital Expenditures are expenditures made in the context of capital formation that are in the nature of adding fixed assets that provide benefits for more than one period. Capital expenditures include capital expenditures for the acquisition of land, buildings and structures, equipment and intangible assets [1]. Capital expenditure aims to provide public facilities and infrastructure that can support various economic activities of the community. Regions should be able to allocate higher capital expenditures than other government expenditures that are relatively less productive. This change in expenditure allocation is also intended for the construction of various capital facilities [2]. The government needs to facilitate various economic improvement activities, one of which is by opening up opportunities for investment. The development of infrastructure and facilities in the region will have an impact on regional economic growth. If the facilities and infrastructure are adequate, the community can carry out their daily activities safely and comfortably which will affect their increasing level of productivity, and with adequate infrastructure will attract investors to open businesses in the area. With the increase in capital expenditure, it will have an impact on the future period, namely increased community productivity with a large population of a region which can be categorized as a basic asset for the development of a region to be able to progress and develop [3].

## 2. Literature Review

Economic growth is an illustration of the impact of government policies implemented, especially in the economic field. Economic growth is the rate of growth formed from various economic sectors which indirectly illustrates the level of economic growth that occurs. For the region, this indicator is important to determine the success of future development. Growth is the main measure of the success of development, and up to the lowest level, either by itself or by the results of economic growth will also be enjoyed by the people of government intervention [4].


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Local own-source revenues are revenues derived from the results of local businesses, the results of the management of disaggregated local assets, local taxes, local levies, and other legitimate revenues, all of which are considered as local own-source revenues [5]. Law No. 33/2004 on Fiscal Balance between the Central and Local Governments states that the three types of local revenue sources are Non-Taxes, Tax Revenue Sharing, and Local Own Revenue. The level of independence of a region increases with the increase in local revenue, thereby reducing the need for transfers from the central government and other regions. The increase in regional own-source revenue indicates that the region is increasingly able to manage its regional income sources.

Population is a number of people both individually and in groups that occupy a certain area or country for at least one year at the time of data collection or population census [6]. Meanwhile, according to the BPS Institute in Indonesian Statistics, "Residents are all people who live in the geographical area of the Republic of Indonesia for 6 months or more and those who live for less than 6 months but aim to settle down". Population plays an important role in increasing regional expenditure. In this case, it means that the population in a province is very influential in increasing regional spending. The size of the population will deal with how quickly the ability to increase the number of means of satisfying needs and facilities and infrastructure to meet these needs. According to the Director General of Fiscal Balance in the Description and Analysis of APBD 2011, the ratio of capital expenditure per capita shows how much spending is allocated by the government for regional infrastructure development per population. The ratio of capital expenditure per capita has a close relationship with economic growth because capital expenditure is one type of government expenditure that drives economic growth.

According to [7], Capital expenditure is budget expenditure for the acquisition of fixed assets and other assets that benefit more than one accounting period. Capital expenditures include, among others, capital expenditures for the acquisition of land, buildings and structures, equipment, intangible assets, and other assets. It covers all costs associated with infrastructure development, including roads, bridges, buildings, and other permanent assets. Based on the Decree of the Minister of Home Affairs Number 29 of 2002, capital expenditure is divided into:

## 3. Research Method

This research uses a quantitative approach with panel data (pooled data) methods. It is said to be panel data because the data is a combination of Time Series and Cross Section. The time series data covers 2016 – 2022, while the cross-section data covers individuals from 8 cities. The data collection technique used is secondary data where data is obtained from BPS and then processed from other sources such as previous research, relevant journals and related articles to complete the information needed so far. study. The independent variable in this research is Capital expenditure while the dependent variable in this research is economic growth, local revenue and population. According to [8] panel data regression has the same purpose as multiple linear regression, which predicts the intercept and slope values. The panel regression model is divided into 3 models, namely the Common Effect Model (CEM), Fixed Effect Model (FEM) and Random Effect Model (REM). Each model has a different type of formula, namely:

$$CE_{it} = \beta_0 + \beta_1 EG_{it} + \beta_2 LR_{it} - \beta_3 P_{it} + \varepsilon_{it} \quad (1)$$

$$CE_{it} = \beta_{0it} + \beta_1 EG_{it} + \beta_2 LR_{it} - \beta_3 P_{it} + \varepsilon_{it} \quad (2)$$

$$CE_{it} = \beta_0 + \beta_1 EG_{it} + \beta_2 LR_{it} - \beta_3 P_{it} + (\mu_i + \varepsilon_{it}) \quad (3)$$

Description :
CE = Capital Expenditure
$\beta 0$ = Intercept
EG = Economic Growth
LR = Local Revenue
P = Population
$\beta 1$, $\beta 2$, $\beta 3$ = Slope
t = Year 2009 - 2023
i = 8 cities
$\varepsilon$ = Error Terms
$\mu$ = Disturbance Variable
*Each formula based on each model listed : Common Effect Model (1), Fixed Effect Model (2), Random Effect Model

From the three models, it is necessary to select the best regression model by testing model specifications such as the Chow Test, Hausman Test, Lagrange Multiplier Test. The chow test is a test conducted to choose a good approach between the fixed effect model (FEM) and the common effect model (CEM). The Hausman test is a test used to choose whether the model used is the Fixed Effect Model (FEM) or the Random Effect Model (REM). The Lagrange multiplier test is a test used to choose the best approach between the Common Effect Model (CEM) and the Random Effect Model (REM) [9]. All of these tests are based on the

following decision selection:

Table 1. Decision Making of Model Selection Test

| Model Selection Test | Condition | Decision |
|---|---|---|
| Chow | Prob cross section F > 0,05 | CEM |
| | Prob cross section F < 0,05 | FEM |
| Hausman | Prob Chi-Square > 0,05 | REM |
| | Prob Chi-Square < 0,05 | FEM |
| Lagrange Multiplier | Breusch-Pagan value > 0,05 | CEM |
| | Breusch-Pagan value < 0,05 | REM |

Source: Gujarati on Basic Economics

After obtaining the best panel data regression model, it is necessary to test the classical assumption test so that the regression model is not biased, and the research results are valid. This applies to regression models that use the OLS (Ordinary Least Square) method, namely CEM and FEM. However, the classic assumption test is not required for regression models that use the GLS (Generalized Least Square) method, namely REM. There are 2 classic assumption tests performed on panel data regression, namely multicollinearity and heteroscedasticity [9]. Multicollinearity test is a method used to evaluate the significant relationship between independent variables in a multiple regression model. Multicollinearity test is usually performed when using more than one independent variable in linear regression, because if only one independent variable, multicollinearity is unlikely to occur. While the heteroscedasticity test is used to identify differences in residual variances between observations in the regression model. These tests are based on the following decision selection:

Table 2. Decision Making of Classical Assumption Test

| Classical Assumption Test | Condition | Decision |
|---|---|---|
| Multicollinearity | correlation coefficient value < 0.8 | There is no multicollinearity problem |
| | correlation coefficient value > 0.8 | There is multicollinearity problem |
| Heterokedasticity | prob value < 0.05 | There is heterokedasticity problem |
| | prob value > 0.05 | There is no heterokedasticity problem |

After that, hypothesis testing is carried out to see the answers to the research problems and the goodness of model. There are 3 hypothesis test, namely partial test (T-test), simultaneous test (F-test) and determination coefficient test ($R2$). The t-test is basically used to show whether the independent variable has an individual (partial) effect on the dependent variable. If its less than 0.05, the independent variable individually (partially) affects the dependent variable. And if its more than 0,05, the independent variable individually (partially) does not affects the dependent variable. The F test is used to see the significance of the influence of the independent variables (simultaneously) on the dependent variable. When the prob (F-statistic) is less than 0,05, then the independent variables simultaneously affect the dependent variable. But if its more than 0,05, then the independent variables simultaneously does not affect the dependent variable. Coefficient of determination is used to see how much the value / level of influence of the independent variables on the dependent variable. The test results are determined based on how large the value of the coefficient of determination ($R2$) is. A small $R2$value means that the ability of the independent variables to explain the dependent variation is very limited. A value close to one means that the independent variables provide almost all the information needed to predict variations in the dependent variable [10].

## 4. Results

To determine which regression model is chosen between fixed effect or common effect in this study, the Chow Test is required. The following are the results of the Chow Test:

Table 3. Chow Test

| Effects Test | Statistic | d.f. | Prob. |
|---|---|---|---|
| Cross-section F | 1.665739 | (7,109) | 0.1249 |
| Cross-section Chi-square | 12.195626 | 7 | 0.0943 |

Source: Research Processed Data

Based on table 3, the results of the Chow test show a cross-section F probability value of 0.0943. This value is bigger than the signification of 0.05 (0.0943 > 0.05), It means the chosen model for this test is the Common Effect Model (CEM). After this, the Hausman test is carried out to see which model is the best between common effect or random effect.

Table 4. Hausman Test

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section Random | 6.802787 | 3 | 0.0785 |

Source: Research Processed Data

The results of the Hausman test on table 4.2 show a random cross-section probability value of 0.785. This value is greater than the value of 0.05 (0.785 > 0.05), It means the chosen model for this test is the Random Effect Model (REM). The Last test used is Lagrange Multiplier test to see which model is best between random effect or common effect. The results of the lagrange Multiplier test show a random cross-section probability value of 0.8954. Based on the results of the Autocorrelation test can be seen from durbin waston, the value of durbin waston is 0.6828. where this is greater than -2 and smaller than 2. So it can be concluded that there is no Autocorrelation greater than 2. After this, a multicollinearity test is carried out to determine whether there is multicollinearity between the independent variables.

Table 5. Multicolinearity Test

| | PE | LOG (PAD) | LOG (JP) |
|---|---|---|---|
| PE | 1.000000 | -0.173004 | 0.055676 |
| LOG (PAD) | -0.173004 | 1.000000 | 0.815767 |
| LOG (JP) | 0.055676 | 0.815767 | 1.000000 |

Source: Research Processed Data

The multicollinearity test results in the table above show that there is no high correlation between the independent variables not exceeding 0.90 so it can be concluded that there is no multicollinearity between the independent variables.

Table 6. Results

| Variable | Coefficient | Sig. | Description |
|---|---|---|---|
| Economic Growth | 0.071994 | 0.0161 | Significant |
| Local Revenue | 0.416124 | 0.0000 | Significant |
| Population | 0.152843 | 0.1569 | Insignificant |
| F-Stat | | 0,0000 | Significant |
| Adj. R-Square | 0,6013 | | Independent variabels in explaining dependent variable are limited |

Source: Research Processed Data

Based on the results obtained from table above, it can be described through the following formula based on common effect model:

$$CEit = \beta 0 + \beta 1EGit + \beta 2LRCit - \beta 3Pit + (\mu i + \varepsilon it)$$

$$CEit = 8.999761 + 0.071994\ EGit + 0.416124\ EGit + 0.152843Pit + [CX = R]$$

## 5. Conclusions

Based on the results of the discussion in the previous chapter, the following conclusions can be drawn Economic Growth partially has a positive and significant effect on Capital Expenditure. Regional Original Revenue partially has a positive and significant effect on Capital Expenditure. Total Population partially has a positive but insignificant effect on capital expenditure. From the simultaneous test (F test) it can be concluded that together Economic Growth, Local Revenue, and Population simultaneously have a significant effect on Capital Expenditure.

## References

[1] David, P. A. (2000). Knowledge, capabilities and human capital formation in economic growth (No. 01/13). New Zealand Treasury Working Paper.
[2] Fox, W. (1987). Public infrastructure and economic development. Rural Economic Development in the 1980s, Agriculture and Rural Economy Division, ERS, USDA.
[3] McConnell, J. J., & Muscarella, C. J. (1985). Corporate capital expenditure decisions and the market value of the firm. Journal of financial economics, 14(3), 399-422.
[4] Sirojuzilam., (2015). "Pembangunan Ekonomi Regional", USU Press, Medan
[5] Gusti., (2016). "Analisis Pengaruh Pendapatan Asli Daerah (PAD) Terhadap Kinerja Keuangan Pada Pemerintah Kabupaten Dan Kota Di Provinsi Jawa Timur". Jurnal ilmiah

[6] Dobson, J. E., Bright, E. A., Coleman, P. R., Durfee, R. C., & Worley, B. A. (2000). LandScan: a global population database for estimating populations at risk. Photogrammetric engineering and remote sensing, 66(7), 849-857.
[7] Agustinus , F. O. (2019). "Impact of Human Capital Development and Human Capital Isolation Mechanisms on Innovative Performance: Evidence from Industrial Companies in Jordan". Jurnal Syntax Transformation.
[8] Widarjono, A. (2018). Estimating profitability of Islamic banking in Indonesia. Jurnal Keuangan dan Perbankan, 22(3), 568-579.
[9] Gujarati, D., (2004). "Basic Econometrics", Edisi 4, The McGraw-Hill Companies, New York
[10] Sugiyono. (2009). "Metode Penelitian Kuantitatif Kualitatif dan R & D". Alfabeta. Jakarta