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Analysis of Variables Affecting the Human Development Index of the Special Region of Yogyakarta Regency/City 2015-2020

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Abstract. This study aims to see what variables affect the Human Development Index (HDI) in the Regency/City of Special Region of Yogyakarta. The analysis method used in this study is panel data regression analysis with model parameter estimation using Fixed Effect Model (FEM) which is used to determine the influence of independent variables on the dependent variable Human Development Index (HDI) in the Regency/City of Special Region of Yogyakarta. The data used is panel data during the period of 2015-2020. The results of this study found that the independent variables have significant effect and no significant effect. Independent variables, namely Regional minimum wage (UMR), poverty (KMS), and Gross Regional Domestic Product (GRDRB) had a significant effect on the Regency/City Human Development Index in the Special Region of Yogyakarta while the Gini Ratio (GR) did not significantly affect the Human Development Index (HDI) in the Regency/City in the Special Region of Yogyakarta.

Keywords : Human Development Index, namely Regional minimum wage, Gini Ratio, poverty, Gross Regional Domestic Product

1 Introduction

The development paradigm that occurs today is economic growth measured by human development. This can be seen at the level of human quality of life of each country. One of the benchmarks of the Human Development Index (HDI) is used to measure the quality of human life. Measured by the quality of Education, Health and economy (purchasing power). Through the improvement of these three indicators, it is expected to improve the quality of human life.

Yogyakarta Special Region has a high population growth rate of 211.23 people per year. Thus has the potential of human resources that are ready to be empowered. The implementation of regional autonomy gives flexibility to the Government of the Special Region of Yogyakarta to carry out regional development more independently. According to data from the Central Statistics Agency (BPS) in the Special Region of Yogyakarta, the level of welfare in the community when viewed based on the Human Development Index is in the "high HDI" with the achievement of 79.97 with a fluctuating number from 2015-2020.

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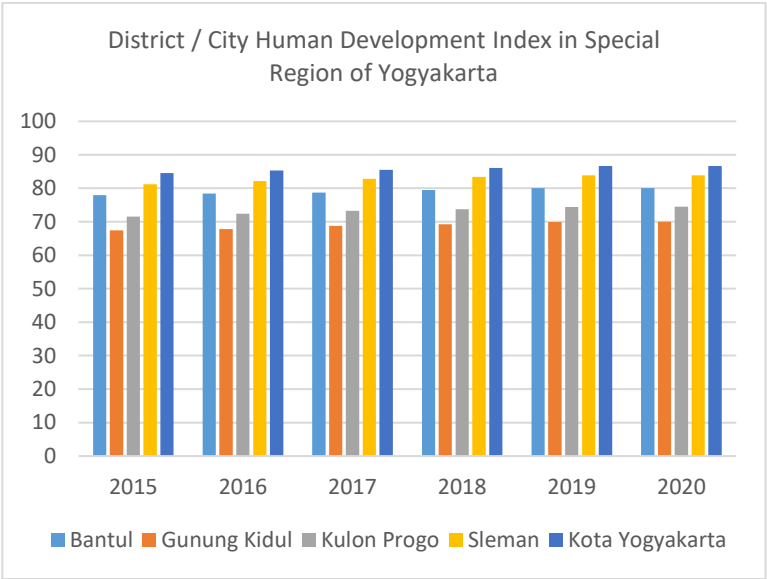

Source : BPS Special Region of Yogyakarta

Figure 1. District/City Human Development Index chart in Special Region Of Yogyakarta 2015-2020

As can be seen from the Human Development Index data above, the quality of life of the people of the Regency/City of the Special Region of Yogyakarta from year to year is increasing. Development in the Special Region of Yogyakarta that takes place as a whole and sustainably has improved the economy of the community. The results of this development are deeply felt by the community, of course, inseparable from the joint efforts and hard work between the government and the community.

Human Resources (HR) plays an important role in creating development. The role is development that aims to create a healthy community environment and enable a productive life. To achieve sustainable development, human resources must be able to develop and optimize capabilities. In practice, development has a variety of complex issues. The development process occurs in all aspects of people's lives, be it economic, political, social and cultural aspects. (Maharani, 2012)

Success in a human development process is inseparable from the performance of the government that plays a role in creating regulations to achieve social order. The government as the implementer of development certainly requires the whole community qualified as the basis of development. To be able to produce qualified human needs efforts to improve the quality of Human Resources. These qualities can be measured through the Human Development Index. (Mulyadi,2003)

Judging from the above phenomenon, human development and in improving the quality of human resources are one of the important things in the development policy strategy in the Regency / City of the Special Region of Yogyakarta. The goal to be achieved in this study is to find out what variables affect the Human Development Index in the Regencies/Cities of the Special Region of Yogyakarta?

2 Literatur Review

The Human Development Index is an important indicator for measuring the successful development of human quality of life. The Human Development Index describes how people achieve human development outcomes in terms of income, health, education, and more. Changes in the Human Development Index indicate an improvement in the quality of human resources in an area. Human resources are the subject and object of development, which shows that humans are not only the subject of development, but also the object of development (Muliza et al., 2017).

The Human Development Index (HDI) is a measure of the achievement of human development based on a number of basic elements of quality of life. The calculation of the Human Development Index used as an indicator of human development has important objectives, including to build indicators that measure the basic dimensions of human development and expand freedom of choice. Utilize a number of indicators to keep that measure simple. Forming a composite index instead of using a number of basic indices (Latifah et al, 2017)

Human Development Index (HDI) is a number value used to determine the success of human development. Juliarini (2019) argues that the High Human Development Index (HDI) illustrates high welfare. Human Development Index can be calculated using three component dimensions, namely Health is used for life expectancy (UHH), education is calculated using the average length of school (RLS), while to measure the dimensions of decent living using indicators of the ability of the purchasing power of the population to the amount of basic needs seen from the amount of expenditure per capita. (BPS, 2021). As for other factors that affect such as the availability of job opportunities determined by economic growth, infrastructure, and government policies. The high value of the Human Development Index indicates success in economic development in a country. (United Nations Development Programme, UNDP, 1990).

In achieving high welfare figures, there are also several influencing factors such as labor, the workforce cannot be separated from the Regional Minimum Wage (UMR). Wages are rewards offered by companies or organizations to a pre-agreed number of workers Wages are based on the regional minimum wage, including The minimum wage by province by region and industry or Regency/City (Umar et al., 2020).

Wages are divided into two parts: minimum wages (the amount of wages received) and real wages (the amount of goods and services that can be purchased with the money's wages). Wages given to workers or need in the form of money in return from employers who have been determined and paid on an employment agreement, agreement or legislation, including benefits for workers and their families, for having done a job or service (Nashahta dan Dewi, 2018).

In the process of human development, poverty is still a serious problem. Poverty is a complex problem that actually comes from the purchasing power of people who cannot meet their basic needs, thus ignoring other needs such as education and health (Mirza, 2011). This leaves a huge gap in human development between the two, and in the end the goal of achieving HDI that has been set by the government has not been achieved properly.

Poverty itself is contrary to human development, since the concept of human development is the ability of man to meet the needs of his life. Therefore, it can be concluded that poverty is negatively correlated with the Human Development Index, so as the Human Development Index increases, the poverty rate decreases. And vice versa, when the poverty rate rises, the Human Development Index will fall. Investment in health and education will be more meaningful for the poor than the non-poor, because the main asset of the poor is their menial labor. The availability of education and health facilities is very helpful in efforts to increase productivity and increase income.

According to (Yacoub, 2012) in his research, poverty is one of the fundamental problems because poverty is related to meeting the most basic needs in life, and poverty is a global problem because poverty is a problem faced by many countries.

To solve the problem of Poverty and measure the economic prosperity of the population in a region is calculated using the Gini Ratio as a Tool for measuring inequality or inequality aggregated (aggregate) The Gini Index is between 0 and 1. The value of 0 means full equality Everyone's income is exactly the same, and the value of 1 indicates a complete inequality (complete equation or complete inequality), The entire population is concentrated in a certain area. Therefore, the greater the value of the Gini Concentration ratio, the more likely it is that the distribution is uneven The number of inhabitants and locations.

The Gini index is a measure of evenness measured by comparing the area formed between the diagonal and the Lorentz. (income distribution) divided the area of the triangle under the diagonal. Daimon and Thorbecke (1995:5) argue that reducing inequality (increasing income distribution) is always incompatible with increasing poverty rates, unless there are two aspects of inconsistency. 1) changes in distribution due to the crisis, the incomes of the lower classes increased dramatically. 2) is a methodological problem associated with the uncertainty of measuring indicators of poverty and inequality.

The Gini coefficient fluctuates, which means that the value of Gini This ratio fluctuates from year to year due to the Income of the regions in different years. From this we can see that it is necessary to understand the economic situation of a region in order to increase regional income and then use GRDP. Gross Regional Domestic Product (GRDP) is the total market value of all regional or provincial Service goods provided over a certain period of time or a certain year. GRDP can be divided into two types, namely GRDP based on Constant price and GRDP at current price. GRDP uses the current price. The ability to identify economic resources, transfers and economic structure of a region. At the same time, constant price GRDP is used to Understand the growth or growth of the real economy from year to year The economy is not affected by price factors.

This GRDP also affects the ability of the community to meet their needs. Logically, if the GRDP increases, the level of per capita income of the community will also increase, with the increase in per capita income, the level of consumption will also increase, in the end the level of welfare will increase (Zainuddin, 2015). It can be concluded that the higher the GRDP per capita in an area, the welfare of the people will also increase.

3 Research Method

This study uses a quantitative descriptive approach so that it is accurate and systematic, this study was conducted with the aim of measuring how much influence the Regional Minimum Wage, Gini Ratio, Poverty and Gross Regional Domestic Product have on the Human Development Index in the Regencies/Cities of the Special Region of Yogyakarta in 2015-2020. This study used secondary data or data that was not obtained directly. The source of data in this study was from the Central Statistics Agency (BPS) of the Yogyakarta Special Region from 2015 to 2020.

Dependent Variables / Bound variables used in this study are the Human Development Index of Regencies/Cities in the Special Region of Yogyakarta.Independent Variables / Free variables used in this study are the Regional Minimum Wage (UMR) Poverty (KMS) Gini Ratio (GR) Gross Regional Domestic Product (GRRB) Regencies / Cities in the Special Region of Yogyakarta.

This study was conducted using panel data analysis by combining time series data analysis with cross section using data from regencies/cities in the Special Region of Yogyakarta for the 2015-2020 timeframe. In estimating this panel data using 3 test models, namely the Common Effect Model (CEM) or Pooled Ordinary Least Square (OLS), with the

Fixed Effect Model (FEM) and the Random Effect Model (REM), with the econometric model as follows:

$$HDI_{it} = \beta_0 + \beta_1 UMR_{it} + \beta_2 KMS_{it} + \beta_3 GR_{it} + \beta_4 PDRB_{it} + \varepsilon_{it}$$

where,

HDI = Human Development Index (Index number)
UMR = Regional minimum wage (Rupiah)
KMS = poverty (%)
GR = Gini Ratio (%)
GDP = Gross Regional Domestic Product (Million Rupiah)
ε = *Error term* (error factor)
β_0 = Constant
$\beta_1 \ldots \beta_4$ = independent variable regression coefficient
i = observation to i
t =Year to t

4 Result and Discussion

4.1 Result

The results of Panel data regression estimation using Common Effect Model (Cem), Fixed Effect Model (FEM), and Random Effect Model (REM) approach can be seen in Table 1

Table 1. Panel Data Regression Results

Variabel	Coeffisient		
	CEM	**FEM**	**REM**
C	13,88468	23,80982	13,88470
LOG(UMR)	4,771540	3,957491	4,771539
KMS	-1,280110	-0,283971	-1,280110
GR	44,71123	-0,359723	44,71122
PDRB	-0,0000002,37	0,00000009,79	-0,0000002,37
R square	0,94382	0,99928	0,94384
Adjusted R square	0,93486	0,99901	0,93486
Statistik *F*	105,0482	3672,503	105,0481
Prob. Statistik *F*	0,00000	0,00000	0,00000

Source: data processed (2022)

Estimated Model Selection Test

To determine the best estimation model from the results of panel data regression carried out with the Common Effect, Fixed Effect and Random Effect model approaches, therefore another test will be carried out using the Chow Test and hausman test.

Chow Test

The Chow test is used to select the best panel data regression model between the Common Effect Model (CEM) and the Fixed Effect Model (FEM). The processing results shown in the Chow test can be seen in the following table:

Table 2. Chow Test Estimation Results

Effects Test	Statistic	d.f.	Prob.
Cross-section F	407,50710	(4,21)	0,0000
Cross-section Chi-square	130,93893	4	0,0000

Source: data processed (2022)

Based on Table 2, it can be seen that the results of the Chow Test of Variable Analysis that Affects the Human Development Index of the Regency/City of the Special Region of

Yogyakarta show a prob value. F of 0.000 < 0.05, so that H_0 rejected thus it can be concluded that the selected model is a Fixed Effect Model (FEM).

Hausman Test

The Hausman Test is a statistical test carried out with the aim of selecting an estimated model Fixed Effect Model or Random Effect Model. With the formulation of the H_0 Hypothesis: Random Effect Model while H_A: Fixed Effect Model, if the Probability value of The Chi-Sq Prob > 0.05 then H_0 not rejected by the conclusion of the selected model rundom effect model (REM), while if the probability of Prob Chi-Sq < 0.05 then the H_0 rejected by the conclusion of the selected model Fixed Effect Model (FEM). The Hausman Test results can be seen in table 3

Tabel 3. Hausman Test Estimation Results

Effects Test	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1630,02769	4	0,0000

Source: data processed (2022)

Based on Table 3, it can be seen that the results of the Hausman Test of Variable Analysis that Affects the Human Development Index of the Regency/City of the Yogyakarta Special Region show that the Chi-Sq Prob value of 0.0000 < 0.05 so that H_0 rejected. Thus it can be concluded that the selected model is the Fixed Effect Model (FEM).

Selected Models

Based on the Chow Test and Hausman test, it can be known together that the suitable and selected model is a Fixed Effect Model (FEM), the estimated results of the Fixed Effect model can be seen in Table 4 below :

Table 4. Fixed Effect Model (FEM)

IPM_{it}=23,8098+3,9574$LOGUMR_{it}$ - 0,2839KMS_{it} - 0,3597GR_{it} + 0,00000009,79$PDRB_{it}$ + ε_{it}
(0,0000)* (0,0005)* (0,8782) (0,0768)***

R^2 = 0,99928; Adj R^2 = 0,99901; F.Stat = 3672,503; Prob F-Stat = 0,0000

Remarks: * significant on the Omegle = 0.01; * * significant on the Omegle = 0.05; * * * significant on the Omegle = 0.10; the number in parentheses is the probability of the statistical value of t.

From Table 4, it can be seen that the three Independent Variables of Regional Minimum Wage (UMR), Poverty (KMS), and Gross Regional Domestic Product (GRDP) have a significant effect on the Human Development Index of Regencies/Cities in the Special Region of Yogyakarta while the Variable Gini Ratio (GR) does not have a significant effect on the Human Development Index of Regencies/Cities in the Special Region of Yogyakarta.

Coefficient of Determination (R^2)

The Coefficient of Determination or also called R Square (R2) aims to show the estimated model estimate. In the presentation of table 4 above, it can be seen that R2 has a value of 0.99928 which means that 99.928% of the variations in the Human Development Index variables can be explained by the variables in the model, namely the influence of the Regional Minimum Wage (UMR), Poverty (KMS), Gini Ratio (GR), and Gross Regional Domestic Product (GR). The remaining 0.072% is influenced by other variables or factors that are not included in the research model.

Simultaneous Significance Test (F Test)

Simultaneous significance test (Test F) is carried out to determine which independent variables affect dependent variables together (simultaneously). The hypotheses in Test F are H0: The model used does not exist and HA: The model used exists. H0 is rejected if the value of p (p-value) probability F Statistics < α, and H0 is not rejected if the value of p (p-value) probability F-Statistics > α. Based on Table 4 it is seen that the value of p (p-value), probability, or empirical significance of statistical prob F is worth 0.0000 < 0.05 so that H0 is rejected by the conclusion that the model used exists.

Effect Validity Test (t Test)

Table 5. Validity Test

Variable	t-statistics	Prob	Alfa	Conclusion
LOGUMR	5,86004	0,0000	< 0,01	significant effect on the α = 0,01
KMS	-4,07168	0,0005	< 0,01	significant effect on the α = 0,01
GR	-0,15512	0,8782	> 0,10	no significant effect
PDRB	1,86103	0,0768	< 0,10	significant effect on the α = 0,10

Based on the influence validity test (t test) for UMR variables in the Fixed Effect Model (FEM) has a positive and significant effect on the human development index. The UMR variable has a regression coefficient of 3.9574 with a prob value of 0.0000 which is statistically significant at α = 1% (0.01).

Based on the effect validity test (t test) for poverty variables in the Fixed Effect Model (FEM) has a negative and significant effect on the human development index. The poverty rate variable has a regression coefficient of -0.2839 with a prob value of 0.0005 which is statistically significant at α = 1% (0.01).

Based on the influence validity test (t test) for the GRDP variable in the Fixed Effect Model (FEM) has a positive and significant effect on the human development index. The GRDP variable has a regression coefficient of 0.00000009.79 with a prob value of 0.0768 which is statistically significantly represented at α = 10% (0.10).

4.2 Discussion

Effect of the Regional Minimum Wage (UMR) variable on the Human Development Index

Based on the estimation results in the panel data, it can be seen that the value of the UMR variable coefficient has a positive and significant influence on the human development index with a linear-logarithmic model which means that each UMR increases by 1 rupiah, the human development index will increase by 3.9574/100 = 0.03957 percent.

The results of this study are in line with research conducted by Nursiah Chalid and Yusbar Yusuf which stated that the effect of the regional minimum wage on HDI is positive and significant. This means that every increase in the regional minimum wage of IDR 1000, the HDI will increase by 0.005 points assuming other variables are constant

Effect of Poverty variables on the Human Development Index

Based on the results of the estimates in the panel data, it can be seen that the poverty variable has a negative and significant influence on the human development index with a linear-linear model which means that each amount of poverty increases by 1 percent, it will reduce the human development index by 0.2839 percent.

The results of this study are in line with research conducted by Muhammad Nurluthfie Setiawan who explained that the influence of the amount of poverty on the human development index is negative and significant, which means that when the poverty rate increases, the HDI will decrease.

Effect of the Gini Ratio variable on the Human Development Index

Based on the results of the estimates in the panel data, it can be seen that the variable gini ratio has a negative and insignificant influence on the human development index with a linear-linear model which means that each gini ratio increases by 1 percent, it will reduce the human development index by 0.3597 percent.

This is in line with research conducted by Nur Isa Pratowo which states that the effect of the gini ratio on HDI is negative, which means specifically stating that in the condition of cateris paribus if regional spending increases by 1 percent, the average human development

index will increase by around 0.034 percent. Income inequality will shrink as a simultaneous effect of the increase in regional spending.

Influence of the variable Gross Regional Domestic Product (GRDP) to the Human Development Index

Based on the estimation results in the panel data, it can be seen that the GRDP variable has a positive and significant influence on the human development index with a linear-linear model which means that each GRDP increases by 1 million rupiah, it will increase the human development index by 0.00000009.79 percent.

This is in line with the research that has been carried out by muliza, T. Zulham and Mirza (2011) which states that the influence of GRDP on HDI is positive and significant, the same results are also put forward by a theory derived from kuznet which states that one of the characteristics of economic growth is the high per capita output (Todaro, 2008). In this case, what is meant by economic growth is GRDP. The high growth of output will cause consumption patterns in society to increase and in this case will increase purchasing power. The high purchasing power of the people will affect the development of the human development index.

4 Conclusion

Based on the results and discussion, conclusions can be drawn as following: During the period 2015-2020 Regencies / cities in the Special Region of Yogyakarta experienced an increase in the Human Development Index, the UMR variable had an effect and was significant on the Human Development Index, the results of this test showed that the Poverty Rate variable in the short term had a negative and significant effect, meaning that when the poverty rate increased, the HDI would decrease. The Gini Ratio variable has a negative and insignificant influence on the Regency / City Human Development Index in the Special Region of Yogyakarta, then the GRDP variable has a positive and significant effect, meaning that when the GRDP per capita increases, the Human Development Index will also increase. Based on the results and discussion, some conclusions from this study are: first, to the government is expected to continue to improve the welfare of society for have easier access to education, health and standards live worthy. The more prosperous society will improve the quality and quantity in all fields, especially in meeting basic needs.Second, it is expected that the government needs to empower the community in the Regency/City of Special Region of Yogyakarta not only through subsidies and social assistance but also on the quality of education and health so as to raise the level human development. And third, for the next researcher to be able to adding other micro and macro variables in explaining their impact the Human Development Index.

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