



# IDENTIFY SEVERAL VARIABLES THAT INFLUENCE THE WELFARE OF THE POPULATION OF INDONESIA

Muhammad Saleh Mire  
Mulawarman University

## ABSTRACT

This study aims to determine and examine the influence of road infrastructure, wages, GDP per capita, and MSMEs on the level of population welfare (human development index) through GDP per capita and economic growth using panel data in 34 provinces in Indonesia during 2017-2022. This research uses a path analysis model with dummy variables by grouping the system into 2 parts, namely areas with a natural resource base, called Group 1, and non-SDA-based areas, called Group 2. The results of the study show that road infrastructure has a significant negative influence on the level of welfare, both in Group 1 and Group 2. This variable also has a significant negative effect on GDP per capita in Group 2, but it is not significant in Group 1. Furthermore, this variable has no influence on economic growth in either Group 1 or Group 2.

Wages in Group 1 have a real positive effect on GDP per capita and HDI (welfare). On the other hand, Group 2 had no influence on these two variables. Furthermore, MSMEs in group 1 have a very real influence on GDP per capita and HDI, but have no influence on economic growth. On the other hand, in group 2 MSMEs have no influence on GDP per capita and economic growth, but have a significant positive influence on HDI. Finally, economic growth has a real positive influence on HDI in Group 1, whereas it has no influence in Group 2.

**KEYWORDS:** Road Infrastructure, MSMEs, Wages, Economic Growth, GDP per capita and HDI

**JEL Classification:** B55, C01, L60

## INTRODUCTION

One of the parameters used for successful development in describing community welfare is the human development index (HDI) which measures human development achievements based on a number of basic components of quality of life. HDI with a basic three-dimensional approach that includes long and healthy life, knowledge, and a decent life. The United Nation Development Program (UNDP) in 1990 originally introduced an HDI indicator that it had developed, namely an indicator that can describe the development of human development in a measurable and representative manner. The HDI number ranges from 0 to 100. The closer to 100, the better the indication of human development (Androge, 2010). HDI itself was first introduced by a Pakistani economist in the 1970s named Mahbub Ul Haq (Khodabakhshi, 2011).

Human development results vary in 34 provinces in Indonesia, showing that prosperity is far from expectations, especially in terms of equality. DKI Jakarta has the highest HDI reaching 81.65 and the lowest is Papua province with an index score of 61.39 in 2022. Specifically, the acquisition of human development index scores in provinces resulting from expansion with the hope of achieving a higher score is not fully proven. The success of the Riau Islands province was by passing the HDI achievement of Riau province, while other provinces showed the opposite results, namely that the province of North Kalimantan was not higher than the province of East Kalimantan, likewise the province of West Sulawesi had no higher score than South Sulawesi. So the results of the expansion of provinces do not guarantee higher welfare than the parent province, in fact many of them will be lower. Variations in Human Development Index (HDI) scores can be seen in Figure 1.

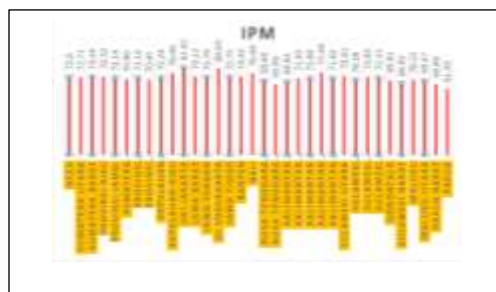


Figure 1. Provincial HDI in Indonesia in 2022



One indicator of success in economic development in a region is economic growth. Economic growth is a process of increasing the productive capacity of goods and services from an economy as a whole and continuously or sustainably over time, resulting in increasing levels of income over time. Rapid economic growth has attracted the attention of economists, politicians and policy makers because economic growth is considered the main prerequisite for achieving a better standard of living for the entire community (Nafziger, 2006). Economic growth is influenced by investment in a broad sense which consists of several production factors in the form of capital, labor, skills and technology (Todaro and Smith, 2020; Branson, 1992). Likewise, infrastructure, especially road infrastructure, is one of the economic tools that can determine the level of economic growth and community welfare (Syafira and Triani, 2021).

Infrastructure is development capital that will produce output, both directly and indirectly. It can be seen directly that infrastructure capital is one of the production factors that will cause economic growth, directly as a third input in the production function and indirectly by influencing total factor productivity (Agenor and Moreno-Dodson, 2006). Furthermore (Mohanty, et al., 2016) states that infrastructure helps overall human productivity and development of a country and also the quality of life of its people. Infrastructure, especially roads, has a tremendous impact on the socio-economic activities of society. The development of road and bridge infrastructure is the lifeblood of community mobility. The infrastructure development program is part of supporting programs in other sectors. Infrastructure development is an indicator of a country's progress (Ministry of PUPR, 2018). Rural infrastructure, especially roads and electricity, can reduce transportation costs, connect villages with markets, facilitate worker mobility and increase access to schools and health clinics (United Nations Development Program, 2016). In particular, road infrastructure plays a crucial role by providing mobility for the efficient movements of people, goods and services as well as providing accessibility to land and a wide variety of commercial and social activities (Meyer and Miller, 2001). Furthermore (Ng, C.P., et al., 2019) found that the growth in road length per thousand population would facilitate export growth. Thus it can be concluded that road infrastructure can lead to economic growth.

Wages are compensation received by workers in accordance with existing provisions and regulations. Economic activities can run smoothly because of the contribution of workers. Thus wages are directly related to production or economic growth. However, wages do not guarantee increased production. Research (Dan Lupu and Mihaela Ifrim, 2023) found that GDP increases cause wages to increase at different frequencies; there is a positive correlation between GDP growth and wage growth; the effects of wage-led growth policies were weak and only on short periods. Furthermore, it was also found that estimates cast a high degree of uncertainty on the effectiveness of wage increase policies promoted by some national authorities to achieve economic growth. Wages and the unemployment rate have a positive relationship. The size of the wages offered will influence people's interest and desire to enter the job market. If wages rise, then someone will tend to enter the job market (Mankiw, 2011). Thus, labor, which is one of the production factors measured by wages, will be able to encourage economic growth.

The increase in wages spearheaded by the government means that industry will inevitably pay higher wages. This will encourage the workforce to improve performance which in turn will have an impact in the form of increasing industrial productivity. Increasing productivity will lead to an increase in business scale which in turn will increase people's income so that the level of welfare can also increase. Apart from wages which can encourage increased productivity, per capita income is an indicator or benchmark in measuring the level of social welfare in a country.

According to BPS(2023), per capita income Indonesia increases every year, while the rate of per capita income fluctuates every year. Per capita income in Indonesia increased in 2020 by US\$ 3,912 while in 2021 it reached US\$ 4, 291 or an increase of 9.69%. Furthermore, in 2022 it will reach US\$ 4,783.9 or an increase of 11.47% and in 2023 it will reach US\$ 5,108 or an increase of 6.77% compared to the previous year. Increase in per capita income in 2023 accompanied by an increase in electricity consumption. If we observe the pattern of change, the increase in nominal and real per capita income in Indonesia has almost increased from year to year. The increase in real per capita income shows two things, namely: (1) an increase in the production of goods and services that exceed the increase in the general price level, and (2) an increase in real income that exceeds the increase in population.

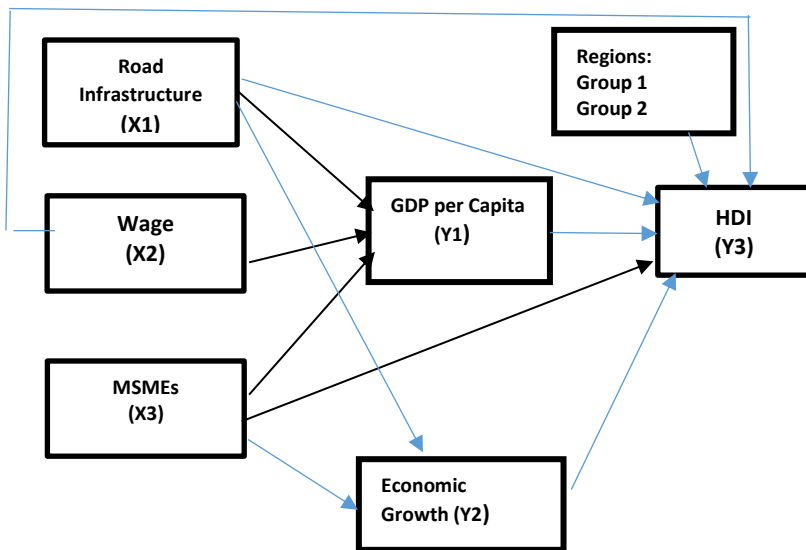
One of the important sectors that uses the most electrical energy is MSMEs because they have a large quantity. This sector has a strategic role in improving the country's economy. This can be seen from the large number of workers working in this sector, the high contribution to the formation of the national economy's gross domestic product (GDP), and helping to reduce public unemployment. Furthermore, this sector has proven its resilience in facing the economic crisis that hit the Indonesian economy when many large companies went bankrupt. However, this sector experiences weaknesses in the form of: limited capital, difficulties in marketing and providing raw materials, minimal knowledge about the business world, limited mastery of technology, low quality of human resources (formal education), poor financial management, lack of proper division of tasks. clear, and often rely on family members as unpaid workers (Tambunan, 2009). Thus requiring various types of assistance, especially in the financial sector. At the heart of the government's strategy lies a commitment to providing vital financial assistance to MSMEs, enabling them to weather the storms of economic uncertainty and emerge stronger. Through initiatives like the People's Business Credit (KUR) and Micro Business Productive Assistance



(BPUM), small businesses receive much-needed financing support, empowering them to invest in their operations, expand their reach, and seize new opportunities. By alleviating financial constraints and facilitating access to capital, these programs pave the way for sustainable growth and resilience in the MSME sector (Amartha, 2024).

The role of MSMEs in economic development is very strategic because they provide the largest contribution, the majority or 99% of businesses in Indonesia are at the MSME level, contributing 61.9% to the total gross domestic product (GDP) and absorbing approximately 97% of the local workforce so that they can be used as a means of alleviating poverty. Micro, small and medium enterprises (MSMEs) have an important role in driving Indonesia's economic growth, especially in the regions. This is proven by data which shows that the number of MSMEs continues to increase from year to year. In 2019, there were 65.47 million MSME units recorded in Indonesia. The contribution of MSMEs to gross domestic income also reached 61.07% or IDR 8,573.89 trillion. Apart from that, MSMEs are able to absorb 97% of the total workforce in Indonesia and collect 60.4% of total investment (BPS, 2023). Thus, an increase in the quantity of MSMEs can cause energy demand, especially electrical energy because basically MSMEs, like other large companies, have production factors that will produce output which has an impact on increasing energy demand, so that it can encourage economic growth. MSMEs have an important role in driving Indonesia's economic growth.

Steady economic growth and adequate labor absorption will have an impact on community welfare or can increase the HDI. Economic encroachment in various economic sectors can have an impact on energy absorption in various sectors because of the positive relationship between output and employment opportunities, thereby creating employment opportunities through employment opportunity multipliers (Miller and Blair, 2012). If high growth and adequate employment opportunities are created, overall societal prosperity can be achieved, even though inequality still exists. Economic growth can be determined by the length of roads, wages, the number of MSMEs and GDP per capita. Furthermore, economic growth and GDP per capita are expected to have an impact on the welfare of society in general, Figure 2. Thus, this study aims to find out and study:



Region with natural resource base (Grup 1)  
Region without natural resource base (Grup 2)

Figure 2. Framework

1. Effect of road infrastructure on GDP per capita, economic growth and HDI
2. The effect of wages on GDP per capita, economic growth and HDI
3. The influence of MSMEs on GDP per capita, economic growth and HDI
4. Compare the influence of road infrastructure variables, wages and MSMEs on GDP per capita, economic growth and HDI in Group 1 and Group 2.



## LITERATURE REVIEW

### *National Income*

Per capita income is a measure of the amount of money earned per person in a country or geographic area. Per capita income can be used to determine the average income per person for an area and to evaluate the standard of living and quality of life of the population, so this concept is one of the main indicators in measuring welfare. GDP is the total amount of remuneration received by production factors participating in the production process in a region/region within a certain period of time, usually one year. Based on this understanding, NTB is the sum of wages and salaries, land rent, capital interest and profits, all before deducting income tax and other direct taxes. This approach method is called the income approach. Apart from that, GDP calculations can also be done using national income, namely adding up all household consumption expenditure and non-profit private institutions, government consumption expenditure, gross domestic fixed capital formation, changes in inventory and net exports (net exports are exports minus imports), within a region/region within a certain period, usually one year. With this method, the NTB calculation is based on the final use of the goods and services produced. Another approach is the production method, which sums up the added value of all economic sectors.

If GDP is divided by population, per capita income is obtained, which is the main measure in determining the level of welfare of a country. GDP is an input to economic growth calculated from the difference between two years of total GDP divided by final year's GDP where Y is GDP. Economic growth is an increase in the long-term capacity of the country concerned to provide various economic goods to its population which is determined by progress or adjustments in technological, institutional and ideological adjustments to various demands of existing conditions (Todaro, 2006). Furthermore, Mankiw (2003) stated that economic growth is a very popular macro performance indicator, used as macro analysis to measure the level of a country's economy. GDP calculations can be done using three (3) approaches: production approach, income approach, and expenditure approach. GDP using a production approach is carried out by summing up the output or added value of all sectors in an economy. GDP using the expenditure approach is to add up the components of final demand including those expressed by  $Y = C + I + G + X - M$  where C is household consumption, I represents investment, G is government expenditure, (X-M) is net exports. The income approach includes components of remuneration received from production factors such as wages/salaries, land rent, capital interest. So in this case we pay attention to the income from each factor of production. Capital provides income in the form of interest; labor produces income in the form of salary or wages; wealth provides income in the form of rent and management or skills generate income in the form of profits. By adding up the income from the four factors of production, GDP is obtained. Based on the three approaches above, it appears that economic growth originates from growth on the aggregate demand side (AD) and/or aggregate supply side (AS) and/or on the aggregate production side.

### *Welfare*

The Government of the Republic of Indonesia defines welfare as the condition of fulfilling the material, spiritual and social needs of citizens so that they can live a decent life and are able to develop themselves so that they can carry out their social functions.

In essence, welfare requires the fulfillment of human needs which include primary needs, secondary needs and tertiary needs. Meanwhile, according to Law No. 11 of 2009, articles 1 and 2 concerning welfare, welfare is defined as a condition where people's adequate needs are met, so that they are able to develop themselves and can carry out their social functions.

According to Pigou (1960) economic theory of welfare is a part of social welfare that can be linked directly or indirectly to the measurement of money. Welfare can be approached based on two things, namely: (1) subjective welfare and (2) objective welfare. Well-being is addressed at the individual, family and community levels. At the individual level, feelings of happiness or sadness, mental peace and anxiety, and satisfaction or dissatisfaction are subjective indicators of quality of life. At the family level, the adequacy of housing conditions, such as whether there is clean water, is an example of an objective indicator. NASW (National Association of Social Workers), a social work organization in America, defines social welfare as a country's system of programs, benefits and services that help people meet the social, economic, educational and health needs that are the basis for survival. their lives (Zhastrow, C., 2010). Thus, the level of human welfare can be measured by physical and non-physical needs, such as per capita consumption levels, crime rates, labor force, economic level, and access to mass media. Apart from that, the level of community welfare can also be measured by the HDI (Human Development Index) which consists of three combined dimensions, namely: age dimensions, educated people and decent living standards.

HDI is an index that can describe the level of social welfare. A country that has a high HDI shows that the level of social welfare is high. Per capita income is one of the components of developing the HDI, in addition to the health level and education level of the community. The Human Development Index (HDI) or Human Development Index (HDI) is a comparative measurement of life expectancy, literacy, education and living standards for all countries throughout the world, a measure applied by the United Nation Development Programmer (1990) in the human development index theory, namely an approach used as a benchmark for the high and low levels of human development.



The Human Development Index (HDI) is an indicator measuring the comparison of life expectancy, literacy, education and living standards set by all countries in the world, which classifies a country as a developed, developing or underdeveloped country so that it can measure the impact on economic policy on quality of life. The Human Development Index (HDI) measures human development achievements based on a number of basic components of quality of life. As a measure of quality of life, HDI is built using a basic three-dimensional approach. These dimensions include a long and healthy life; knowledge, and a decent life. These three dimensions have a very broad meaning because they are related to many factors. To measure the health dimension, life expectancy at birth is used. Furthermore, to measure the dimensions of knowledge, a combination of literacy rate and average years of schooling is used. Meanwhile, to measure the dimensions of a decent life, indicators of people's purchasing power for a number of basic needs are used which are seen from the average amount of expenditure per capita as an income approach that represents development achievements for a decent life (BPS, 2023).

### **Economic Growth**

Economic growth as a process of increasing output over time is an important indicator for measuring the success of a country's development (Todaro, 2005). There are several theories that explain economic growth, including: 1). Classical theory, according to the views of classical economists, exists four factors that influence economic growth, namely: population, stock of capital goods, land area and natural resources, level of technology used.

According to the classical view, the law of diminishing returns will affect economic growth. 2). Harrod-Domar theory, in analyzing the problem of economic growth, this theory aims to explain the conditions that must be met so that an economy can achieve steady growth in the long term. Harrod-Domar's analysis uses the following examples: capital goods have reached full capacity, savings are proportional to national income, the capital output ratio remains in value and the economy consists of two sectors, 3). Neo-Classical Growth Theory, this theory looks at it from a different point of view, namely from the supply perspective. According to this theory, which was developed by Swam and Solow in 1956, economic growth depends on the development of production factors. This theory states that the most important factor that brings about economic growth is not an increase in capital and an increase in labor, but the most important factor is technological progress and an increase in the skills and expertise of the workforce. According to the neo-classical view, technology does not depend on economic forces or is exogenous. Later, Romer (1986), Lucas (1988) and Grossman-Helpman (1991) argued that technological progress cannot be considered exogenous, but rather, endogenous. Thus, technological progress results from, among other things, innovation, trade, competition and education. The endogenous growth model emphasizes human capital and research and development (R&D) as the main drivers of economic growth. There are many empirical studies that support the ability of endogenous growth models to explain economic growth in developing countries (Ang and Madsen, 2011)

### **THE METHOD**

This type of the research is quantitative, take the type of study of comparative causality that processes numerical data that can be calculated using statistical formulas. The data analysis technique used in this study is path analysis which estimates of the direct and indirect influence of exogenous variables on endogenous variables. This study uses secondary data, namely data that is already available and collected by other parties and it was panel data. The data was taken from the Indonesia Central Statistics Agency (BPS) which covers 34 provinces in Indonesia. The data used is 2017-2022 yang berasal dari dua kelompok, kelompok pertama adalah wilayah dengan basis sumber daya alam dan kelompok kedua adalah wilayah non-basis sumber daya alam. The statistical analysis technique used is path analysis using the Amos 18 statistical application program.

Based on the conceptual relationship in the framework of thinking, mathematically functional relationships can be written as

$$Y_1 = f(X_1, X_2, X_3)$$

$$Y_2 = f(X_1, Y_1)$$

$$Y_3 = f(X_1, X_2, X_3, Y_2, Y_3, D, DX_1, DX_2, DX_3)$$

Whereas:

X1 = Road infrastructure (length of state, provincial and district roads, km)

X2 = Wage (minimum wage of provinces)

X3 = MEMEs (number of small and medium enterprises)

Y1 = GDP per capita (ratio of GDP to population, rupiah)

Y2 = Economic growth (increase in production expressed as a percentage)

Y3 = Welfare (Index score from HDI)

D = Dummy variable, D = 0. Region with non-SDA basis, and D=1 region with SDA basis)

The structural equation can be rewritten:



$$\ln Y_1 = \alpha_0 + \alpha_1 \ln X_1 + \alpha_2 \ln X_2 + \alpha_3 \ln X_3 + \mu_1 \dots\dots\dots(3.1)$$

$$Y_2 = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_3 + \mu_2 \dots\dots\dots (3.2)$$

$$Y_3 = \varphi_0 + \varphi_1 \ln X_1 + \varphi_2 \ln X_2 + \varphi_3 \ln X_3 + \varphi_4 \ln Y_1 + \varphi_5 \ln Y_2 + \varphi_6 D + \dots\dots(3.3)$$

$$\varphi_7 D \ln X_1 + \varphi_8 D \ln X_2 + \varphi_9 D \ln X_3 + \mu_3$$

Substituting the value of dummy variable

D=0 in the equation (3.3), HDI which is expressed mathematically in Group 1 can be explained

$$Y_{31} = \varphi_0 + \varphi_1 \ln X_1 + \varphi_2 \ln X_2 + \varphi_3 \ln X_3 + \mu_4 \dots\dots\dots(3.4)$$

and D=1 in the same equation, HDI which is expressed mathematically in Group 2 can be explained

$$Y_{52} = (\varphi_0 + \varphi_4) + (\varphi_1 + \varphi_7) \ln X_1 + (\varphi_2 + \varphi_8) \ln X_2 + (\varphi_3 + \varphi_9) \ln X_3 + \mu_5 \dots(3.5)$$

**RESULTS AND DICUSSIONS**

**Model Fit Test**

Chi-square statistic, as stated earlier, is the most fundamental test to measure overall fit, it is very sensitive to the size of the sample used. The model is considered good if the Chi-square value is small. The smaller the value, the more feasible the research, meaning that the more it describes the match between the variance of the sample taken and the research population. The results of data processing that have been carried out using the AMOS 18 program are as shown in Table 1.

**Table 1. Goodness of Fit Index.**

N o.	Goodness of fit Measure	Cut-off Criteria	Estimation (cut off Value)	Fit Situation
1	Chi-Square ( $\chi^2$ ) Significance Probability (p)	smaller the better $\geq 0.05$	6.498 0.165	Fit
2	RMSEA (the Root Mean Square Error of Approximation)	$\leq 0.05$	0.056	Fit
3	NFI (Normed of Fit Index)	$\geq 0.95$	0.983	Fit
4	IFI (Incremental Fit Indices)	$\geq 0.95$	0.993	Fit
5	CMIN/DF (the minimum Sample Discrepancy Function)	$\leq 2.00$	1.625	Fit
6	TLI (Tuckler Lewis Index)	$\geq 0,95$	0.946	Marginal
7	CFI (Comparative Fit Index)	$\geq 0,95$	0.993	Fit
8	Hoelter's Index	$\geq 200$	296	Fit

Sumber: Malkanthie, 2015; Wan, 2002. and Amos Result

Furthermore, the analysis results show:  
 Region with natural resource base (Grup 1), Group I

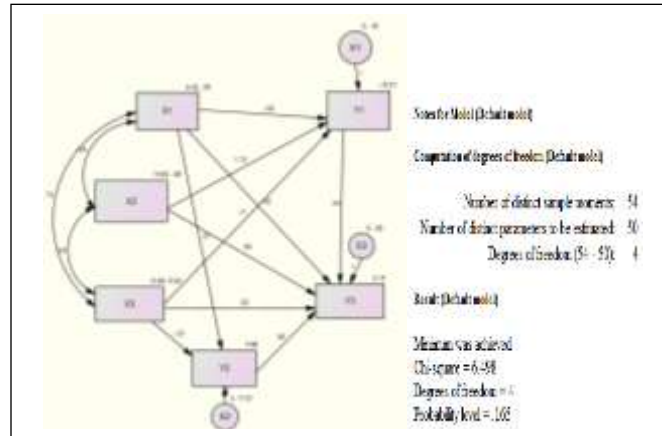


Figure 3. Variable Coefficients before the Pandemic

Maximum Likelihood Estimates					
Regression Weights: (Group number 1 - Default model)					
		Estimate	S.E.	C.R.	P
GDPPerCapita	<-- RoadInfrastructure	-.033	.051	-.634	.526
GDPPerCapita	<-- Wage	1.721	.156	11.026	***
GDPPerCapita	<-- MSMEs	.108	.018	5.972	***
EconomicGrowth	<-- RoadInfrastructure	.211	.537	.394	.694
EconomicGrowth	<-- MSMEs	-.229	.174	-1.314	.189
HDI	<-- MSMEs	.016	.001	11.613	***
HDI	<-- RoadInfrastructure	-.024	.004	-6.733	***
HDI	<-- GDPPerCapita	.037	.006	6.180	***
HDI	<-- Wage	.051	.015	3.456	***
HDI	<-- EconomicGrowth	-.001	.001	-2.041	.041

Gambar 4. Koefisien of the Independent Variable to dependent variable in Group 1

The estimation results shown in Figure 2 can be written as a regression equation in the pre-pandemic period:

$$\ln \hat{Y}_1 = -15.510 - 0.033 \ln X_1 + 1.721 \ln X_2 + 0.108 \ln X_3 \dots\dots\dots(3.6)$$

Sig.: 0.000 0.526 0.000 0.000

$$\hat{Y}_2 = 4.963 + 0.211 \ln X_1 - 0.229 \ln X_3 \dots\dots\dots(3.7)$$

Sig.: 0.280 0.694 0.189

$$\ln \hat{Y}_3 = 3.141 - 0.024 \ln X_1 + 0.051 \ln X_2 + 0.016 \ln X_3 + 0.037 \ln Y_1 - 0.001 \ln Y_2$$

Sig.: 0.000 0.000 0.000 0.000 0.000 0.041

.....(3.8)

Region without natural resource base, Group 2

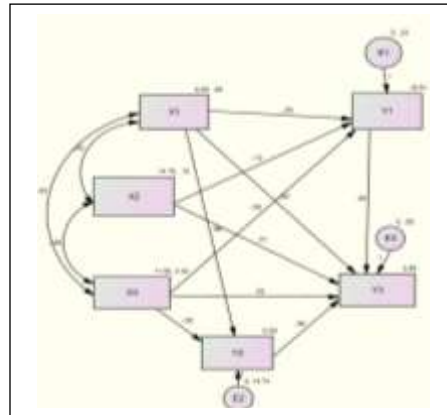


Figure 5. Variable Coefficient in The Pandemic Period

Maximum Likelihood Estimates

Regression Weights: (Group number 2 - Default model)

		Estimate	S.E.	C.R.	P
GDPPerCapita	<-- RoadInfrastructure	-.242	.113	-2.147	.032
GDPPerCapita	<-- Wage	-.123	.183	-.676	.499
GDPPerCapita	<-- MSMEs	-.023	.037	-.618	.537
EconomicGrowth	<-- RoadInfrastructure	.663	.896	.741	.459
EconomicGrowth	<-- MSMEs	-.078	.292	-.266	.790
HDI	<-- MSMEs	.022	.003	6.374	***
HDI	<-- RoadInfrastructure	-.025	.011	-2.344	.019
HDI	<-- GDPPerCapita	.051	.011	4.711	***
HDI	<-- Wage	.008	.017	.489	.625
HDI	<-- EconomicGrowth	-.001	.001	-1.050	.294

Gambar 6. Koefisien of the Independent Variable to dependent variable in Group 2

Meanwhile, from Figure 3, it is obtained

$$\ln \hat{Y}_1 = 15.509 - 0.242 \ln X_1 - 0.123 \ln X_2 - 0.023 \ln X_3 \dots\dots\dots(3.9)$$

Sig.: 0.000 0.032 0.499 0.573

$$\hat{Y}_2 = -2.577 + 0.663 \ln X_1 - 0.078 \ln X_3 \dots\dots\dots(3.10)$$

Sig.: 0.781 0.495 0.790

$$\ln \hat{Y}_3 = 3.563 - 0.025 \ln X_1 + 0.008 \ln X_2 + 0.022 \ln X_3 + 0.051 \ln Y_1 + 0.001 \ln Y_2$$

Sig.: 0.000 0.019 0.000 0.625 0.000 0.294

.....(3.11)

**RESULTS AND DISCUSSION**

Based on equations (3.6), (3.7) and (3.8), it is known that road infrastructure has a significant negative influence on HDI, but has no influence on GDP per capita and economic growth in group 1. If road infrastructure increases by 1% then HDI decreases by 0.02 % at the confidence level  $\alpha= 0.05\%$ . This fact is relatively more in line with research conducted by (Kusharjanto and Kim, 2011) which stated that improvements to several types of infrastructure including roads in the long term will have a lower impact on increasing HDI compared to improving infrastructure in general. On the other hand, in group 2 with (3.9), (3.10) and (3.11) road length has a significant negative effect on GDP per capita and HDI, but has no effect on economic growth. If road length increases by 1%, GDP per capita will decrease by 0.24% and HDI by 0.02% at the confidence level  $\alpha= 0.05\%$ . The fact that road infrastructure does not have an influence on economic growth is in accordance with research conducted in South Sumatra by (Kaupa, 2015).



The results of this research show that road infrastructure has not in fact provided the expected benefits for the welfare of society in general. This is because many of the roads created by regional governments still consist of dirt roads which are difficult for vehicles to pass smoothly. The condition of this road is so bad that the dirt road is still muddy in the rainy season. It should be noted that the types of central and provincial government roads relatively did not increase every year during this research period, so if there was an increase in road length, only district roads increased.

Wages are remuneration received by workers which is determined and paid according to an agreement or regulation. Based on equations (3.6), (3.7) and (3.8), it is known that in Group 1, wages have a very real positive influence on GDP per capita and HDI. On the other hand, Group 2 had no influence on these two variables. If wages increase by 1% in Group 1, it will cause an increase in GDP per capita of 1.77%, which is elastic GDP per capita to wages. Furthermore, if wages increase by 1%, HDI will increase by 0.05%. In connection with this fact, research conducted by (Karim at al, 2021) found that the level of wages affects the increase in HDI in Sulawesi Island. On the other hand, research conducted by (Zhidan Shi and Xiao Tang, 2020) states that in marginal conditions, a decrease in HDI is accompanied by an increase in wages.

Paying attention to the regression equations (3.9) and (3.11), it is known that in Group 2 wages have no influence on GDP per capita and HDI. It is hoped that the greater the wages received by workers, the level of prosperity will increase and vice versa, if the wages of workers are lower, the level of prosperity of workers will also be lower because wage-earning labor is one of the main factors of production. The research results show that wages have no effect on GDP per capita in Group 2 because the wages received by workers are not commensurate with the needs of society in general, especially in this study using the UMP as a variable. So the facts show that there is a conflict between Group 1 and Group 2 in terms of wages. So it can be concluded that Group 1 is more prosperous than group 2 in terms of the effect of wages on GDP per capita and HDI.

MSMEs are individual businesses that are created by individuals or business entities that have certain characteristics and criteria. SMEs in group 1 have a very real influence on GDP per capita and HDI, but have no influence on economic growth. On the other hand, group 2 has no influence on GDP per capita and economic growth, but has a significant positive influence on HDI. If MSMEs increase by 1% it will cause an increase in GDP per capita of 0.11% in Group 1. In group 2 if wages increase by 1% it will cause HDI to increase by 0.02%. Pertumbuhan Ekonomi memberikan pengaruh negatif yang nyata pada Grup 1, sebaliknya pada Grup 2 tidak memberikan pengaruh terhadap HDI. Jika pertumbuhan ekonomi naik 10 % maka akan menyebabkan kenaikan HDI sebesar 0,01%. So the elasticity of economic growth towards HDI is very small and is inelastic with a negative sign. The research facts are contrary to research conducted by (Maulana at. al, 2013) which states that economic growth has a positive influence on HDI.



**Gambar 7. Perkembangan beberapa Variabel Penelitian.**

As an illustration of national developments, several variables in the research can be seen in Figures 7a - 7d, each of which shows the development of GDP per capita (Figure 7a), the rate of economic growth (Figure 7b), the development of HDI (Figure 7 c) and the



development of provincial minimum wages (Figure 8c). The most prominent thing is the development or rate of growth of the Indonesian economy, where in 2020 it experienced growth of minus 3.03%, while wages continued to experience positive development.

## CONCLUSION AND RECOMMENDATION

### Conclusion

Based on the analysis and the results of the previous discussion, the following conclusions are drawn:

1. Road length has a significant negative effect on HDI, but has no effect on GDP per capita and economic growth in Group 1. On the other hand, in Group 2, road length has a significant negative effect on GDP per capita. GDP per capita and HDI have no significant effect on economic growth.
2. In Group 1, wages have a real positive influence on GDP per capita and HDI. On the other hand, Group 2 had no influence on these two variables.
3. SMEs in Group 1 have a real influence on GDP per capita and HDI, but do not have an influence on economic growth. On the other hand, group 2 has no influence on GDP per capita and economic growth, but has a significant positive influence on HDI
4. Economic growth has a real positive influence on Group 1, whereas Group 2 has no influence on HDI.

### Recommendation

The suggestions to be put forward based on the discussion and conclusions that have been stated, among others:

1. Local governments should prioritize road improvements, not increasing the length of roads because length has a negative influence on GDP per capita and HDI
2. The increase in wages in Group 2 must receive attention and be calculated carefully, especially its impact on inflation because it has no effect on GDP per capita and HDI
3. MSMEs need continuous guidance from both the government and the private sector so that small businesses can move up from small to medium and from medium to large businesses.
4. The government should make efforts to ensure that economic growth is maintained or increases from year to year because it turns out that this variable has had a negative influence, which means there is a decline in economic growth.
5. In efforts to increase HDI, the government should pay attention to and prioritize improving the quality of road infrastructure, growth of MSMEs, GDP per capita and wages.

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