



Effect of Green Economy Variable on Sumatera Regional Income (2018-2023)

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ABSTRACT

Increasingly rapid economic growth has not only met human material needs, but also increased global environmental pollution which requires every country to pay a heavy price for climate change and environmental pollution that occurs. The environmental problems that occur urge policies to implement a green economy as a solution to the most urgent and effective environmental problems. This research was conducted by analyzing the issue of implementing a green economy on regional income growth. This research aims to see the influence of factors in implementing the green economy concept on the economic growth of the Sumatera region. The analytical method used is quantitative analysis with a panel data regression model consisting of common effect, fixed effect and random effect approaches from secondary data on green economy variables, namely public data on air quality index as an environmental pillar, life expectancy, average length of schooling, and the open unemployment rate as a social pillar, fiscal spending based on its function as an economic pillar and the GRDP level at constant prices in 10 Sumatera Provinces from 2018-2023. This research shows that there is a positive and significant influence between the green economy on regional income, namely life expectancy and average length of schooling, while the environmental quality index, open unemployment rate and fiscal spending have a negative and insignificant effect on regional income.

INTRODUCTION

A country's economic growth refers to an increase in the capacity to produce goods and services as measured by an increase in Gross Domestic Product (GDP) or the regional level of Gross Regional Domestic Product (GRDP). Economic growth is often associated with improving people's well-being, reducing poverty, and improving overall quality of life.

The rapid economic growth since 1950 has not only met the material needs of human beings, but also increased global environmental pollution that requires each country to pay dearly for climate change and environmental pollution that occurs. Global climate change caused by the continuous emission of greenhouse gases is therefore an urgent challenge facing humanity to come up with new solutions for sustainable growth. Various studies reveal that the current rate of economic growth is unsustainable as it poses serious environmental problems in the form of climate change, air pollution, polluted water, and loss of biodiversity (Yikun et al., 2023).

Environmental problems do not only occur in big cities on the island of Java, even Air Quality Index (AQI) shows some big cities on the island of Sumatra into the category of dangerous and very unhealthy. Data from airvisual.com on (Erwinsyah, 2021) September 17, 2019 at 10.25 WIB shows, Simpang City, Jambi has an AQI of 353 or enter the city with the most dangerous air quality in Indonesia. This figure increased compared to the previous day with an AQI of 320. Pekanbaru, Riau is in second position with AQI of 320. The next cities that have hazardous air quality are in Muaralembu, Riau; Muaro, West Sumatra; and Sijunjung, West Sumatra with AQI of 317. Other cities also showed poor air quality with a category of very unhealthy. There are four cities in Riau province with AQI 299, namely Baserah, Lubukjambi, Tanjunggadang, and Teluk Kuantan. While in Bangkinang, Riau recorded an AQI of 290.

In 2008, the United Nations launched the Green Economy Initiative, which states that a green economy can generate enormous economic, social and environmental benefits. Furthermore, the World Bank proposed the concept of an inclusive green economy, which shows that an inclusive green economy allows countries to maintain growth while also protecting the environment and meeting the needs of all people. It can be seen that the green economy is an economic model of sustainable development with a focus on achieving unity in economic growth, social harmony and Environmental Protection (Hari Kristianto, 2020).

The debate on the implicit role of the green economy regarding sustainable development in recent years has ended with the approval at the European level of ambitious action plans and strategies, being the engine of the transition to a green economy (Dogaru, 2020). Lavrinenko, et al. (2019) in his research proves the positive role of green economy towards sustainable development in EU countries in the period 2016-2017. Government policies on the green economy have begun in Indonesia, including in the palm oil processing industry (Erwinsyah & Djuhartono, 2020).

In the context of the green economy, economic growth is seen as a process that takes into account environmental impacts. This approach has combined various economic, environmental, and social aspects in a balanced framework. One of the main aspects in a green economy is the wise use of natural resources,

by minimizing the use of fossil fuels and reducing waste and pollution. This includes investments in renewable energy, the development of environmentally friendly technologies, and the promotion of sustainable lifestyles.

The process of achieving emission-free Indonesia requires commitment not only in terms of budget but also some strategic policies. The Indonesian government is urged to take immediate action in tackling the volume of emissions due to the growing impact on the global climate. Climate change that occurs can have adverse effects on human safety and health. It is estimated that the impact of climate threats that occur in 2030 could reach 3.45 percent of Indonesia's GDP. This figure is not small. So, from that this should be avoided immediately. The government together with various parties must take early steps so that emission intensity can be overcome immediately. The purpose of this study is to see the influence of factors applying the concept of green economy to the economic growth of Sumatra by analyzing data from 2018-2023.

LITERATURE REVIEW

Green economy and sustainable economic growth

Sustainable development doesn't just focus on environmental issues. More broadly than that, sustainable development encompasses three policy scopes: Economic Development, Social Development, and Environmental Protection. UN documents, especially the 2005 World Summit document, mention that these three dimensions are interrelated and are driving pillars for Sustainable Development. (Makmun, 2020). The United Nations (UN) together with 194 countries, civil society, and various economic actors from all corners of the world compiled the SDGs. This is an effort to overcome poverty, inequality, and climate change in the form of concrete action with a target to be achieved by 2030. The objectives and targets include 3 (three) aspects, namely economic, social and environmental (PR, 2016). (Sasmita, Restiatun and Yani, 2021).

Green economy is the idea of economic development that can improve the welfare of society by taking into account environmental conditions. The strategy for a green economy can be done through a structured approach, namely for investment in natural resource capital, as well as investment in energy efficiency and Natural Resources. This research focuses on strategies towards a green economy through capital inversion of Natural Resources. In capital investment, it can focus on several sectors, namely agriculture, fisheries, water, forests and biodiversity. To achieve a green economy, conducive conditions are needed and support the development of both strategies on capital investment and energy investment (National Development Planning Agency, 2012). The green economy also supports sustainable development efforts. This is based on the characteristics of a green economy that aims to improve living standards but by preserving the environment so that the next generation can still meet their needs. There are three main pillars in sustainable development, namely economic growth, social, and Environmental Protection (Development Planning Agency, 2013). Economic growth can be obtained through the GDP of each business sector. Based on the classification of business fields, the Agriculture, Hunting, Forestry, and fisheries sectors have the second largest GDP contribution after the processing industry sector in contributing GDP in Indonesia (Saputri and Oktaviana, 2023).

Green economy is an economic methodology that supports the harmonious interaction between human life and nature so that the needs of both can be met. Within this concept, alternative energy sources, environmental quality, sustainable agriculture and fauna protection are studied. In addition, the green economy is part of the context of sustainable development in alleviating poverty. This was the main topic at the 2012 UN meeting. In the meeting, it was conveyed for the whole world to form a green economy policy as a spear in advancing the country's economic growth along with improving the protection and social progress of the community. In this case, the implementation of green economic policy is carried out with the growth of environmentally friendly industries as a whole (Loiseau et al., 2016). The core meaning of the green economy concept is in line with the understanding (Dogaru, 2021) that in addition to economic growth (GDP), significant environmental protection is also achieved.

(Dogaru, 2021) said that the green economy is a system of economic activities ranging from production, distribution to consumption related to sustainability. A green economy is also a type of economy that produces well-being and social justice and is correlated with significant reductions in environmental risks and ecological deficits. The order in the green economy policy aims to restore the lost harmony between man and nature. So we need policies that challenge various parties to act. Growth based on green economy is very conducive to sustainable environment and inclusive social development in sustainable economic growth requires a balance to overcome the global crisis with attention to environmental impact and assimilative capacity of the environment. This means that the green economy is assumed to be able to direct economic recovery. In other words, Research (Heshmati, 2018) explains that the green economy model is a compatible economic growth model because it is not only preserving but also improving environmental quality. The term green economy implies the development of new technologies and clean industries that create and increase natural capital and reduce the risk of environmental hazards. In line with (Purnomo et al., 2021) conveyed that the application of clean industry can maintain the Prevention of environmental disasters from a variety of different externalities. Green economy can reduce energy use, reduce pollution and minimize environmental damage optimally as a result of the crisis that is happening now, such as global climate change. A viable energy policy is able to balance energy security, economic growth, inclusive trade competitiveness and environmental concerns (Akinyemi et al., 2017). Penelitian (San et al., 2022) also wrote that development based on a green economy is a description of the sustainable use of energy and Natural Resources. This is as a means to advance the national economy. The concept has become an urgent concern over the past few years as it seeks to restore the national economy and preserve the environment. Policies on energy efficiency, pollution control and Environmental Protection contribute to future income and economic perspectives (Carfora et al., 2019).

So, from several studies that have been done as written by Dogaru conducted in Romania, Heshmati from Germany and Carfora from Italy give the result that the application of green economy policies can reduce environmental damage optimally, reduce global climate change that can interfere with

environmental and Natural Health and balance energy security. In addition, Heshmati also emphasized that the green economic model is a compatible economic growth model to be applied in Germany. (Lumbanraja and Lumbanraja, 2023).

Air Quality Index as an Environmental Pillar

The Air Quality Index and green economic growth are two very related concepts in the context of sustainable development. The Air Quality Index shows how clean or polluted the air is and what impact it has on human health in the short term. Green economic growth refers to a model of economic development that pays attention to environmental sustainability. Its main objective is to achieve a balance between economic development and the conservation of Natural Resources and the environment.

Good air quality is one of the indicators of the success of green economic growth. Policies that support the green economy, such as regulation of vehicle and factory emissions, can directly affect air quality by reducing the number of pollutants released into the atmosphere, the transition from fossil fuels to renewable energies (such as solar and wind energy) reduces pollutant emissions that contribute to the decrease in AQI. Investments in environmentally friendly public transport and electric vehicles can reduce emissions from the transport sector, which is one of the main sources of air pollution in many cities. Improving energy efficiency in industry and buildings can reduce energy consumption and associated emissions, which has a positive impact on air quality, the development of green spaces in cities not only helps absorb air pollutants but also improves the quality of life of the population.

By applying the principles of the green economy, we can improve the AQI and at the same time achieve sustainable economic growth. Efforts to improve air quality through a green economy approach are long-term investments that will not only provide health benefits but also economic and environmental benefits.

Life expectancy as a Social Pillar

Life expectancy as a social pillar in the green economy variable plays an important role in demonstrating social well-being and public health as a result of sustainable economic policies. The green economy not only focuses on environmentally friendly economic growth but also pays attention to its social impact, including improving the quality of life and public health.

By placing life expectancy as a social pillar in the variables of the green economy, policymakers can focus more on the health and well-being outcomes of society as the primary goal of sustainable development. This ensures that economic growth is not only environmentally friendly but also improves people's overall quality of life.

In the concept of Welfare State, the state is required to extend its responsibility to the social, political, and economic problems facing the people. The functions of the state also include activities that were previously beyond the scope of state functions, such as expanding the provision of social services to individuals and families in special matters, such as social security, Health. The

role of the state cannot be separated from the Welfare State because the State plays a role in managing the economy, which includes the responsibility of the state to ensure the availability of basic welfare services at a certain level (Maulana and Fadlia, 2022).

In a practical context, countries that successfully implement green economy principles tend to see increases in life expectancy due to better Environmental Quality, more effective health services, and higher social welfare.

The Open unemployment rate as a Social Pillar

The open unemployment rate as a social pillar in the green economy variable illustrates how green economic policies focus not only on environmental sustainability but also on the creation of sustainable and inclusive jobs. The reduction of unemployment through a green economy shows that the transition to a more environmentally friendly economy can also support social stability and the well-being of people.

In aggregate demand theory, massive investments in green infrastructure and clean technologies can increase aggregate demand in the economy, which in turn creates jobs. Government spending and private investment in green projects can stimulate the economy and reduce the open unemployment rate.

By placing the open unemployment rate as a social pillar in the green economy variable, development policies can focus more on creating sustainable and inclusive jobs, which in turn supports social stability, economic well-being, and overall public health.

Average length of schooling as a Social Pillar

The average length of schooling as a social pillar in the green economy variable highlights the importance of education in supporting the transition to a sustainable economy. Education plays a crucial role in equipping individuals with the knowledge and skills needed to participate in the green economy, as well as raising awareness about environmentally friendly practices.

By making the old-school average a social pillar in the green economy variable, we can ensure that the transition to a sustainable economy is supported by a skilled, innovative and environmentally conscious workforce. Quality and inclusive education is key to achieving long-term sustainability and well-being goals.

Fiscal spending as a pillar of the economy

Fiscal spending as an economic pillar in the green economy variable plays an important role in supporting the transition to a more sustainable economy. Strategic government spending can stimulate green economic growth by creating jobs, encouraging clean technological innovation, and improving environmental quality. By using fiscal spending as an economic pillar in the green economy variable, governments can play a key role in fostering sustainable economic growth, creating decent jobs, and improving the quality of the environment. Prudent and sustainable fiscal policies are key to achieving the long-term goals of a green economy.

Gross Regional Regional Income

Gross Regional Domestic Product (GRDP) is one of the main indicators for measuring economic performance at the regional level. GRDP reflects the total added value of all goods and services produced in a region in a given period. In the context of the green economy, GRDP needs to be adapted to integrate aspects of sustainability and environmental impact. The green economy aims to achieve sustainable and inclusive economic growth by minimizing negative impacts on the environment.

Traditional economic growth theories, such as Solow's theory and the endogenous growth model, focus on factors such as capital accumulation, technological advances, and increased productivity as key drivers of economic growth. GRDP is used as a measure to quantify this growth. However, this traditional approach often ignores the environmental impact and long-term sustainability.

The green economy integrates environmental and social dimensions into the framework of the traditional economy. Its main objective is to achieve economic growth that uses natural resources efficiently and sustainably, reducing greenhouse gas emissions and the effects of climate change. GRDP and green economy seek to integrate economic growth with environmental sustainability and social inclusion. By adjusting traditional GRDP to include environmental and social factors, we can achieve more sustainable and equitable development. The implementation of this framework requires a strong commitment from the government, the private sector, and society to work together to create a greener and more sustainable future.

METHODOLOGY

This study uses secondary data that support the provision of information related to the research variables tested. The scope of research tested is to associate the 3 Pillars of the green economy, namely, economic, environmental, and social. Secondary Data obtained explain the indicators of each variable studied. The research Data used in the study are quantitative.

The time range of data used is from 2018 to 2023. The secondary Data is sourced from data from BPS (Central Statistics Agency) and DGT KEMENKEU (Directorate General of financial balance) as well as the Annual Report of the Ministry of Environment and Forestry (MoEF).

This study analyzed the data using a panel data regression method consisting of common effect, fixed effect, and random effect approaches. The selection of the best model among the three models above is done by testing the panel data specifications consisting of Chow, Hausman and Legrange Multiplier tests.

Regression equation model panel data in this study are as follows:

$$Y = a + b_1X_1 + b_2X_2 + \dots + b_nX_n$$

With:

Y = Gross Regional Domestic Product (GRDP);

X1 = Air Quality Index;

X2 = life expectancy;

X3 = average length of schooling;
 X4 = Open unemployment rate;
 X5 = fiscal spending.

RESULT AND DISCUSSION

Selection of The Best Models

Panel data regresi terdiri dari pendekatan common, fixed, dan random effect. The estimated results of the three models above are presented in the following table.

Table 1. Panel Data Regression Estimation Results

<i>Variable</i>	<i>Common effect</i>		<i>Fixed effect</i>		<i>Random Effect</i>	
	<i>t-stat</i>	<i>p-value</i>	<i>t-stat</i>	<i>p-value</i>	<i>t-stat</i>	<i>p-value</i>
C	-0.264	0.792	27.349	0.000	11.022	0.000
Air Quality Index	4.958	0.000	-0.598	0.553	-0.585	0.560
Life Expectancy	0.726	0.470	3.123	0.003	3.136	0.002
Open Unemployment Rate	-1.643	0.106	7.367	0.000	7.353	0.000
The Average Length Of School	1.436	0.157	-2.740	0.009	-2.738	0.008
Fiscal Spending	0.236	0.814	-1.831	0.074	-1.831	0.073

To begin with, we must choose the best model among the Common effect, Fixed effect, and Random effect models through a model specification test consisting of the chow Test and the Hausman test, the results of the model specification test are as follows.

Chow Test

Based on the results of the CHOW Test, The Chi-square cross-section probability value of 0.000 is smaller than the significance threshold of 0.05. Thus, rejected and accepted, we conclude that the fixed effect model is preferable to the common effect model.

Hausman Test

Based on the results of the Hausman test, the probability value (prob. Chi-square) of 0.004 is smaller than the significance threshold of 0.05. So, rejected and accepted, it can be concluded that the fixed effect model is more consistent than the random effect model.

Classical Assumption Test

Before analyzing the model, we must perform a classical assumption test to make sure the model is valid as an estimator. The classical assumption test consists of multicollinearity Test, and heteroscedasticity Test. Multicollinearity test was conducted to determine whether there is a high correlation between independent variables. Multicollinearity test in this study was conducted by evaluating the value of VIF.

Table 2. Multicollinearity Test

Variable	VIF value
Air Quality Index	0.06
Life Expectancy	0.04
The average length of school	0,74
Open Unemployment Rate	-0.00
Fiscal Spending	-0.11

Based on the results of multicollinearity test, the VIF value of all independent variables is less than 10.0. So, there is no multicollinearity problem in the five independent variables used in this study.

Heteroskedastitas test was conducted to determine whether there is a similarity of variants between the rest of the observations.

Table 3. Heteroscedasticity Test

Variable	Prob
Air Quality Index	0,204
Life Expectancy	0,079
The average length of school	0,101
Open Unemployment Rate	0,568
Fiscal Spending	0,478

The probability value of all variables is higher than the significance level of 0.05. So, it can be concluded that there is no heteroscedasticity problem in the model.

Regression Model

The results of testing the model specifications show that the fixed effect model is the best among the three. Therefore, the estimated results of the fixed effect model will be analyzed further in this study.

Hypothesis Test

F-Statistics

The estimation results showed a statistical value of 5.4095 and the probability value of test F of 0.0004 is smaller than the significance level of 0.05. Thus, it can be concluded that all independent variables simultaneously have a significant effect on GRDP at the level of 0.05.

Coefficient Of Determination Test

R-Squared model value of 0.351 means that a model can explain the relationship between the independent and dependent variables by 35.1%.

T-Statistics

The effect of partially independent variable on the dependent variable is done by comparing the p-value and significance level of 0.05.

Table 4. Fixed effect model t-statistik

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Air Quality Index	-1.13 E-06	1.89 E-06	-0,598239	0,5530

Life Expectancy	0,025626	0,008203	3,,123980	0,0033
The average length of school	0,197315	0,026782	7,367336	0,0000
Open unemployment rate	-0,013004	0,004744	-2,740974	0,0090
Fiscal Spending	-0,000936	0,000511	-1,831055	0,0744

First, we will examine the effect of the Air Quality Index on GRDP in the provinces in Sumatra. As seen in the table above, the estimation results show that the air quality index variable has a regression coefficient value of $-1.13 \text{ E-}06$ and a probability value of 0.5530 greater than the significance level of 0.05. With a regression coefficient of $-1.13 \text{ E-}06$ it can be concluded that the Air Quality Index has a negative but not significant effect on GRDP at a significance level of 0.05. Then, examine the relationship between life expectancy and GRDP. As seen in the table, the estimation results show that life expectancy has a regression coefficient value of 0.025626, and a probability value of 0.003. The probability value of 0.003 is smaller than the significant level of 0.05. With a regression coefficient of 0.025 it can be concluded that life expectancy has a positive and significant effect on GRDP at a significance level of 0.05.

Next, analyze the effect of the average length of school on GRDP. The estimation results show that the average length of school has a regression coefficient value of 0.1973 and a probability value of 0.00. The probability value of 0.00 is smaller than the significant level of 0.05. With a regression coefficient of 0.197 it can be concluded that the average length of school has a positive and significant effect on GRDP at a significance level of 0.05.

Then, this study analyzed the effect of open unemployment rate on GRDP. As seen in the table above, the estimation results show that the Open unemployment rate variable has a coefficient value of -0.013 and a probability value of 0.009 is smaller than the significant level of 0.05. With the regression coefficient of -0.013 it can be concluded that the Open unemployment rate has a negative and significant effect on GRDP at a significance level of 0.05.

Finally, examine the effect of fiscal spending on GRDP. As shown in the table, the estimation results show that the fiscal expenditure variable has a regression coefficient value of -0.000 , and a probability value of 0.074. The probability value of 0.074 is greater than the significant level of 0.05. With a regression coefficient of -0.000 it can be concluded that fiscal spending has a negative but insignificant effect on GRDP at a significance level of 0.05.

DISCUSSION

Effect of Air Quality Index on GRDP

Sumatra often faces forest and land fires, especially during the dry season. These fires are usually caused by clearing land for agriculture and oil palm plantations through burning. Smoke from these fires can cause severe air pollution, which affects not only Sumatra but also neighboring countries such as Malaysia and Singapore. Sumatra has a variety of industries, including oil refineries, paper mills, and palm oil processing plants. Emissions from these industries contribute to air pollution, especially in industrial areas such as Riau and South Sumatra. Major cities in Sumatra, such as Medan, Pekanbaru, and

Palembang, often face the problem of poor air quality. Factors such as traffic density, industrial activity, and wildfires contribute to high levels of air pollution in these areas.

From the estimation results in this study, it can be concluded that the air quality index has a negative on GRDP at a significance level of 0.05. This is not in line with the research of Jiang et al., 2021 which states that from an economic point of view, climate change and air quality problems can also arise through economic development because in order for the economy to continue running, people must use their human resources (HR) to run the economy (Jiang et al., 2021). This means Air Quality Index (IKU) can have various influences on the Gross Regional Domestic Product (GRDP) of a region. This relationship between air quality and the economy is complex and multidimensional, involving aspects of health, productivity and policy. The Environmental Pillar plays a crucial role in supporting sustainable and inclusive economic growth. By integrating environmental policies into economic development strategies, countries and regions can ensure that GRDP growth not only occurs in the short term but is also sustainable in the long term, bringing far-reaching benefits to communities and ecosystems.

Effect of life expectancy on GRDP

Life expectancy (AHH) is one of the important indicators in assessing the level of well-being and health of a region. From the results of the estimates made it can be concluded that life expectancy which is an important indicator of well-being has a on GRDP at a significance level of 0.05. This is in line with research conducted in 34 provinces in Indonesia which shows that life expectancy has a positive and significant effect on regional economic growth in Indonesia in accordance with various previous studies (Barro 1991; Caselli et al. 1996; Floud et al. 2011; Knowles and Owen 1997; Levine-Renelt 1992; Mankiw Gregory et al. 1992; Robert J. Barro 1996; Sachs 1997). With the increase in regional economic growth, it will contribute to the improvement and development of the Indonesian economy nationally (Alrivaldi Syahrizal Rusli, 2023).

In general, high life expectancy tends to contribute positively to GRDP. Investment in health and education is key to increasing life expectancy, which in turn can promote economic growth and the overall well-being of society.

Effect of average school years on GRDP

Jhingan (2012: 421) investment in education is determined by its contribution in raising gross national income or the formation of physical capital in a period. Schultz studied the contribution of education to the growth of national income in the United States from 1990 to 1956, finding that resources allocated to education rose about 6.5 times (a) compared to consumer income in dollars; (b) compared to gross physical capital formation in dollars. In other words, investment in education contributes 3.5 times more to the increase in gross national income than investment in physical capital (Hepi and Zakiah, 2018).

From the estimation results in this study, it can be concluded that the average length of school has a positive and significant effect on GRDP at a significance level of 0.05. This is in line with research conducted (Hepi and Zakiah, 2018). The average length of schooling indicates the higher formal education achieved by the people of a region. The higher the average length of school means the higher the level of Education undertaken. Average length of schooling is the average number of years spent by people aged 15 and over across all levels of formal education. To obtain jobs offered in the modern sector is based on a person's level of education and the level of income owned during life is positively correlated with the level of Education. This level of income is greatly influenced by the length of time a person obtains education (Hepi and Zakiah, 2018).

Effect of open unemployment rate on GRDP.

The Open unemployment rate (TPT) expresses the percentage rate of the number of unemployed with the number of the labor force. This indicator connects the implementation of the green economy with the welfare of the community. In terms of low-carbon industrial development, the paradigm is expected to encourage the development of the green sector to create new jobs that can reduce the unemployment rate (Ministry of PPN/Bappenas, 2020).

From the estimation results in this study, it can be concluded that the Open unemployment rate has a negative and significant effect on GDP at a significance level of 0.05. This means high unemployment rate reduces productivity and economic output, lowers household income and consumption, increases the social burden and the public budget, and triggers various social and psychological problems. Efforts to reduce unemployment through job creation, increased labor skills, and investment in productive sectors can help improve local incomes and overall community well-being.

Effect of fiscal spending on GDP

Fiscal spending by function refers to the allocation of government spending to different sectors or different functions, such as education, health, infrastructure, security, among others. These expenditures are designed to meet the specific needs of the community and promote economic development and social well-being.

From the estimation results in this study, it can be concluded that fiscal spending has a negative but not significant effect on GRDP at a significance level of 0.05. Whereas fiscal spending, or government spending, should have a significant effect on local revenue. These expenditures include various aspects, such as investments in infrastructure, education, health, and social programs, all of which can promote economic growth and increase local revenues. Fiscal spending has a strong and positive influence on local income through various channels such as improving infrastructure, labor quality, and socio-economic stability. Local governments that focus on strategic spending in key sectors can drive economic growth, improve people's well-being, and ultimately increase local revenue. Investments in education, health, and infrastructure are some of the most effective forms of fiscal spending to achieve these goals.

CONCLUSION AND SUGGESTIONS

Based on the results of analysis and discussion that has been tested in this study, can be obtained some conclusions that:

There are research indicators that explain the variables of the green economy, namely the environment (Air Quality Index), social (life expectancy, open unemployment rate, and average length of School), economic (fiscal spending). And 1 indicator of research that explains the variable regional income (GRDP) Sumatra.

The results of research have been obtained that there is a positive and significant influence between the variables of the green economy on regional income Sumatra. This means that the implementation of the green economy will have a positive impact on the growth of the region. Green economy is a development approach that considers environmental and sustainable aspects. Implementation of green economy policies can reduce negative impacts on the environment, such as pollution and degradation of Natural Resources.

The green economy encourages economic diversification by creating new industries and jobs, for example in the renewable energy, waste management and sustainable agriculture sectors. This diversification can increase the economic stability of the region. Regions that implement green economy principles may find it easier to gain access to green funding from international agencies and central governments. This incentive can significantly increase local revenue. The green economy can improve people's quality of life by providing a cleaner and healthier environment. A healthy society is more productive and able to contribute better to the local economy.

People who are more aware of the importance of the environment will be more supportive of local government policies and programs that are green-oriented. This community participation can accelerate the achievement of green economic goals and increase regional income. Overall, the implementation of the green economy has the potential to have a significant positive impact on local income through various mechanisms, including increasing efficiency, diversifying the economy, and reducing environmental risks.

Relevant advice that can be given by implementing public policies related to reducing economic activities that adversely affect the environment as well as building on the type of relationship that occurs between the green economy and regional growth. The policy that can be done and related to this study is to pay attention to economic activities that support the reduction of pollution, Baseline emissions and greenhouse gases (GHG). Reduction of GHG emissions by utilizing biogas generated from the conversion of kerosene/diesel/diesel (baseline) to biogas. Energy investments with clean energy policies can also reduce the intensity of emissions that continue to increase. This can be done by introducing policies that support renewable energy sources. Emissions from energy production (crude oil, diesel, diesel) account for the largest share of greenhouse gas emissions. The Indian state first introduced a renewable energy program. As a result, India has experienced the fastest economic growth over the past twenty years. India implemented it by facilitating renewable energy to remote or remote areas that increase the demand for household energy consumption. In addition to increasing

economic growth, clean energy policies can create energy efficiency and reduce air pollution.

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