
ANALYSIS OF THE EFFECT OF INCREASING THE GDP OF CENTRAL JAVA PROVINCE THROUGH INFRASTRUCTURE DEVELOPMENT**Jeffri Winardy, Jerly Engelina, Desy Rinika and Arvin Clarence**

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Infrastructure can be said to be the main driver for the growth of economic activity in every country in the world, therefore the importance of infrastructure cannot be underestimated. However, infrastructure development for Central Java is considered to be still in its early stages and as such, inadequate infrastructure could seriously hamper the economy. This study aims to investigate the effect that an increase in GDP has on infrastructure growth through data collected from various sources. The methodology used to analyze and review the information generated by the data is a quantitative method. The data used is secondary data on infrastructure in 35 districts in Central Java from 2010 to 2020. The analytical tool used in this study is panel data regression using the fixed effect method. Indicators to determine the progress of the national economy can be seen from the values seen in various GRDP in Indonesia. The results of this study conclude that the COVID-19 pandemic has affected several things, one of which is the country's economic growth. Planned infrastructure development can bring growth to the economy of a region as in the example shown above. Infrastructure development is one of the supporting factors to increase economic growth in a region. The development can be in the form of the establishment of hospitals, transportation facilities, public schools and other.

KEYWORDS

GDP, Infrastructure , Economic, Production

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INTRODUCTION

Economic growth is seen as the most important part of economic policy in any country or economic system (Muttaqin, 2018). The endogenous growth model, which was an improvement on the Harrod– Domar and Solow growth models, explains that investment in human capital, innovation and knowledge would unquestionably contribute to economic growth (Ogundipe, Mobolaji, & Ogundipe, 2021). Beside, Countries with higher rates of savings have had a faster economic growth than those with lower saving rates (Ribaj & Mexhuani, 2021). Many analysts believe that economic growth in a high-income country tends to be slower every year to come in the next period and partly that is the development of this country's population which is expected to decline significantly (Baker, De Long, & Krugman, 2005).

Gross Domestic Product (GDP) can be interpreted as the total amount of production produced by the government (Arif, 2014). Gross Domestic Product is a production of the value of goods and services originating from within a country in a certain period. The calculation of national income is also a concept in gross domestic product. According to (Tatan Sukwika, 2018) Gross Regional Domestic Product (GRDP) is a very important indicator and is used to determine the economic condition of an area in a period, whether it is based on prevailing prices or on the basis of constant prices. The influence of Regional Domestic Product (GRDP) in a related area will always follow a certain pattern based on the results of a selective study when faced with certain situations and conditions, so that equitable development needs to be carried out thoroughly if the targets set before the development are to be achieved.

GRDP has an unfavorable influence on the development of the unemployment rate, thus causing the unemployment rate to decrease if the regional GRDP increases and vice versa. This explanation agrees with the notion (Laksamana, 2016) where GRDP has a large and negative effect when faced with unemployment growth in Central Java.

Infrastructure development within the country has become an important aspect in the process of accelerating the level of national and regional development. Infrastructure has a role to be the driving wheel of economic growth (Andiyan & Rachmat, 2021). GRDP (Gross Regional Domestic Product) is one of the most important indicators in knowing the condition or economic growth of a region from within the level of one period. GRDP can be interpreted as the sum of all income earned from each business unit of economic activity in an area (Wahyuningtyas, Rusgiyono, & Wilandari, 2013). This GRDP can be used as a source of information in planning, designing or developing in the economic field.

Infrastructure can be mentioned as one of the drivers of a country's economic growth. The source comes from an allocation of public and private financing. According to (Gie, 2002) in (Hawali & Aritenang, n.d.) in macroeconomic theory, the availability of infrastructure services is an influence on reducing production costs and of course also affects the marginal productivity of private capital. Infrastructure is an important influence for improving the welfare of human life (Atmaja & Mahalli, 2015). One example is an increase in the value of consumption, production capacity of the workforce and as an entry point to employment (Sulaksono, 2015). According (Mankiw, 2003) argues that infrastructure is a physical system that provides facilities in the form of drainage, bridges and others as a form of government investment in its citizens to encourage economic development. Infrastructure is also built to advance a company's

productivity level in the form of an increase from a company so that it can become even better (Hapsari, 2011).

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This research was conducted in order to determine the effect of infrastructure development on economic growth conditions in Central Java Province. The analysis was compiled based on the results of economic data in the province of Central Java from 2010-2020. By using quantitative analysis methods, the authors can determine the rate of economic growth that occurs in an area that is difficult to separate from the infrastructure in the country such as transportation, telecommunications, sanitation, and energy. These factors can cause infrastructure development within the country to be the basis of sustainable economic development.

Based on data from the Central Java Statistics Agency (BPS Jateng) it has been noted that the effects of infrastructure development in Central Java are developing from year to year. Infrastructure plays an important role in increasing the value of state consumption, access to employment, increasing labor productivity, increasing prosperity in the country's economy and realizing macroeconomic stability.

Gross Regional Domestic Product in Central Java province has increased from 2010 to 2019. However, based on data from BPS it is known that in 2020 there will be a decline due to the COVID-19 pandemic. This epidemic has caused national income in Central Java to decline, many economic activities have slowed (Indayani & Hartono, 2020), one of which is infrastructure development the regional and state economies experienced a slump that year.

The province of Central Java is experiencing rapid development of infrastructure, because Central Java has a high population and there are many companies that are established in the area. In this case, the movement of infrastructure greatly affects the GDP in the country. Therefore, research to examine more deeply the impact of infrastructure development on GRDP is very important in order to increase the pace of the economy of Central Java province.

Previously, there have been previous studies that are relevant to this study, one of the studies conducted by (Zamzami & PUJIYONO, 2014) with the title Analysis of the Effect of Infrastructure on the GDP of Central Java in 2008 – 2012. The results of This study indicates that the length of road, irrigation, the rate of education (Senior High School), public civil servants, and the development expenditure, have affect significantly to regional GDP of Central Java. Meanwhile, water, electricity, the rate of health (amount of bedroom in hospital) and housing positively affect regional GDP but not significant. Semarang city and Surakarta city have good regional GDP because their coefficients are positive, meanwhile the other cities are negative. The result of this study also founded the irrigation has the biggest impact.

RESEARCH METHODS

During the research process, the author's team used quantitative research to carry out this analysis. The approach used in this research is descriptive research. This research was conducted by collecting descriptive data about a social phenomenon. The author uses quantitative data in conducting the research process. Quantitative data is one type of data that depends on numbers and numbers. The data source used by the author is primarily from the BPS (Central Statistic Agency) website which contains data needed by the authors to determined the development of GRDP in Central Java, mainly on Batam from the year 2010 to 2020, with the secondary source being namely through various literature studies, news and several journals which contains references the author feel correlates with the topic. The population referred to in the study This is the entire area in the district and city consisting of 29 districts, 6 municipal areas and 576 sub-districts. The sample is

part of the population. Here the author uses a sample of the area and population to conduct this research.

RESULTS AND DISCUSSION

Infrastructure development in an area is an activity that has been planned and carried out as a form of effort to achieve change towards a better condition compared to the situation before the development took place. Therefore, many want development in their respective areas so that the quality of life and welfare of the people in their area experience a more positive change, the intended infrastructure can include several projects such as train stations, bridge construction, construction of hospitals and public schools, transportation facilities and others. The things mentioned earlier can be called a form of supporting factors that encourage the growth of an economy in a region or country.

So as the object of research, the research team uses data regarding the Gross Domestic Regional Product of the province of Central Java as a measuring tool and as the basis for the results of this group's research in analyzing the impact of infrastructure development that can directly affect the economic growth of a region, especially in the Central Java area.

Produk Domestik Regional Bruto Jawa Tengah Tahun 2010-2020 Gross Domestic Product (GDP) of Central Java in 2010-2020	
2010	623.224621.33
2011	692.561627.45
2012	754.529436.05
2013	830.016016.43
2014	922.471181.11
2015	1.010.986637.17
2016	1.087.316682.68
2017	1.172.794523.68
2018	1.268.261165.59
2019	1.361.567356.73
2020	1.348.600397.72

Picture 1. GDP of Central Java. Source: <https://jateng.bps.go.id/>

Based on the table above, the GRDP of Central Java province experiences constant economic growth (except in 2020 where the GRDP of Central Java has decreased due to COVID-19) every year, this is believed to have occurred due to the sustainable infrastructure development experienced by the region. For example, the construction of the Semarang-Solo toll road that connects the city of Semarang with the city of Surakarta and passes through five other districts has a very positive influence on the activity and productivity of the agricultural and industrial sectors of each region connected to this toll road by providing easy access between producers and distributors. and producers with supply chains, thereby facilitating regional economic growth and Gross Regional

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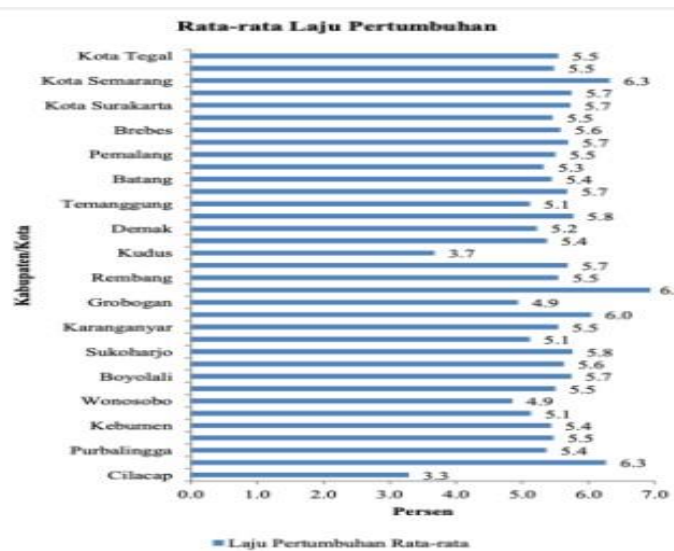
Domestic Revenue in the Central Java region since the completion of the Semarang-Solo toll road construction project on November 11, 2011.

So from the example mentioned above, it can be concluded that infrastructure development has a very prominent impact on the economy of a region and also on a country when we pay attention to Gross Domestic Product, with this the welfare of the community also increases thanks to the ease of access provided by the completion of the bridge.

LAPANGAN USAHA	2010	2011	2012	2013	2014	2015	2016	2017	2018
Industri Pengolahan/ Manufacturing	215.156.474,55	241.531.779,47	263.739.825,69	292.260.728,16	329.025.312,38	354.642.135,00	377.237.312,37	405.586.118,97	436.424.700,72
1 Industri Batubara dan Pengilangan Migas/ Manufacture of Coal and Refined Petroleum Products	45.466.170,04	45.138.077,58	40.535.616,61	46.421.511,57	47.763.806,84	49.305.428,84	45.780.962,31	46.680.480,82	48.162.830,61
2 Industri Makanan dan Minuman/ Manufacture of Food Products and Beverages	60.804.948,93	77.280.549,42	82.614.009,87	90.129.827,32	105.019.911,10	121.215.654,02	136.196.854,03	147.924.997,10	159.968.283,81
3 Industri Pengolahan Tembakau/ Manufacture of Tobacco Products	49.474.496,60	51.781.348,77	62.270.320,02	67.644.126,37	77.939.910,27	79.338.721,83	83.691.026,20	91.051.178,35	97.539.935,35
4 Industri Tekstil dan Pakaian Jadi/ Manufacture of Textiles; and Wearing Apparel	16.412.654,61	18.623.002,81	21.697.839,08	24.883.114,39	26.449.948,70	27.341.493,49	29.266.607,33	31.974.880,79	35.902.270,98
5 Industri Kulit, Barang dari Kulit dan Alas Kaki/ Manufacture of Leather and Related Products and Footwear	1.710.800,44	1.970.898,28	2.365.744,93	2.784.591,54	3.213.155,64	3.430.552,10	3.715.160,94	3.896.509,21	4.599.049,21
6 Industri Kayu, Barang dari Kayu dan Gabus dan Barang Anyaman dari Bambu, Rotan dan Sejenisnya/ Manufacture of Wood and of Products of Wood and Cork, and Articles of Straw and Plaiting Materials	11.414.191,63	12.348.238,41	13.145.075,07	14.986.420,62	17.255.448,49	19.189.006,59	21.481.571,72	23.146.793,22	26.792.572,20
7 Industri Kertas dan Barang dari Kertas; Percetakan dan Reproduksi Media Rekaman/ Manufacture of Paper and Paper Products, Printing and Reproduction of Record Media	2.303.420,57	2.324.274,83	2.375.603,49	2.440.428,43	2.912.157,66	3.245.907,81	3.403.613,35	3.630.144,76	3.868.796,11
8 Industri Kimia, Farmasi dan Obat Tradisional/ Manufacture of Chemicals and Pharmaceuticals and Botanical Products	10.056.853,95	12.369.269,82	15.996.659,36	17.481.709,88	20.363.042,57	22.321.099,72	23.342.252,87	24.906.372,67	26.462.634,02
9 Industri Karet, Barang dari Karet dan Plastik/ Manufacture of Rubber, Rubber Products and Plastics Products	2.924.210,40	3.380.125,41	3.866.274,36	4.031.622,14	4.436.270,99	4.437.796,98	4.867.608,50	5.197.524,35	5.250.612,58
10 Industri Barang Galian bukan Logam/ Manufacture of Other Non-Metallic Mineral Products	4.125.731,95	4.750.674,45	5.693.762,12	6.207.080,89	6.698.627,69	7.221.526,99	7.737.368,18	8.278.697,73	8.295.732,01
11 Industri Logam Dasar/ Manufacture of Basic Metal	1.981.446,13	2.401.214,79	2.677.825,97	2.885.970,73	3.255.566,94	3.245.423,59	3.125.078,85	3.377.920,11	3.440.222,99
12 Industri Barang Logam; Komputer, Barang Elektronik, Optik; dan Peralatan Listrik/ Manufacture of Fabricated Metal Products, Computer, and Optical Products, and Electrical Equipment	3.140.211,21	3.464.144,86	4.187.726,35	5.042.494,64	5.641.760,07	5.613.805,06	5.267.720,59	5.721.286,67	5.734.288,97

Picture 2 GRDP of the Central Java
Sumber: <https://jateng.bps.go.id/>

As the table above shows, the GRDP of the Central Java region in the processing industry will experience rapid growth over the next 10 years. The team of authors believe that this rapid growth is due to the completion of the construction of the Semarang-Solo toll road which not only facilitates social mobility but also connects industry with the natural resources, human resources and supply chains needed to operate their processing activities more efficiently and optimally.



Picture 3 The average growth rate of GRDP of districts and cities in Central Java

The results of the analysis obtained from the author's team on the average growth rate of GRDP in districts and cities in Central Java can be seen from table 1.3 which concludes that there is a large increase in each part of the district and city such as

Rembang which is the first position in Central Java with 6.9% and followed by Semarang City and Purbalingga City with the second position with a percentage of 6.3%. In addition, in the third and subsequent positions only get a percentage of 6.0%-3.3%. It is an obligation of the government to carry out comprehensive infrastructure in the districts and cities in Central Java in order to consider the economy and development of the infrastructure sector in Central Java which is part of Indonesia.

CONCLUSION

Based on the analysis above, it can be concluded that Batam City has a fairly good GRDP every year in the 2010-2019 period and has decreased in 2020 due to the Covid-19 virus. The results of the GRDP of the City of Batam each year are quite influential on the economy of the city of Batam, this can be seen from the growth rate of GRDP each year, although the average is below 5%, it can bring significant changes to the profits of the City of Batam. Which in turn may also bring significant changes towards the rate at which the city is developing its infrastructure and facilities which can improve the quality of life for the citizens living in the area. Those facilities being public schools, hospitals, interconnecting roads allowing the people to easily access the previously mentioned facilities and their workplace, which would then improve their productivity and increase the GRDP of Batam, causing the cycle to repeat again.

In conclusion, the economic growth of a city largely depends on how developed its infrastructure are. The authors provide author recommendations related to this analysis, namely during this covid-19 pandemic, hopefully the government can improve further improvements to the economy of Batam City which was affected by the pandemic.

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