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Analysis of the influence of road infrastructure on the economic growth of the Mama district in the period 2003-2013

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ABSTRACT

The purpose of this research aims to analyze the effect of road infrastructure's expenditure, and the road quality toward the Growth of Economy of Mamasa Regency by using secondary data in the form of time series for the period 2003-2013. The analysis method used in this research was 2SLS .This research uses economic growth and condition of the road as the dependent variable while the independent variable is the government expenditure on road infrastructure.As the result, the effect of the road infrastructure toward economic growth showed that the government expenditure has been positive but insignificant correlation toward economic growth while the decreasing correlation of the road quality gives insignificant correlation toward economic growth.

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1. INTRODUCTION

One of the most frequently used modes of infrastructure is roads, where according to Law Number 38 of 2004 concerning roads where roads play a role as transportation infrastructure which has an important role in the economy which is the lifeblood of society, nation and state, social culture, environment, politics, defense and security and to be used for the greatest possible prosperity of the people, as an infrastructure for the distribution of goods and is a unified road network system that connects and binds the territory of the Republic of Indonesia.

Transportation infrastructure, especially roads, is a very important indicator for investors to invest in an area. In accordance with the function of infrastructure as a stimulus for economic growth, investors will evaluate the existence of transportation infrastructure from two sides, namely: Investors will be interested in investing if adequate transportation infrastructure is available (investment follows the ship);

Table 1. GRDP and Mamasa Economic Growth for the 2003-2013 Period Based on 2000 Constant Prices (Rupiah)

Year	GRDP Price Constant(Rupiah)	Economic growth(%)
2003	448,891,360,000	4.08
2004	462,728,150,000	4.34
2005	482,241,670,000	5.70
2006	474,905,610,000	5.70

2007	479,896,180,000	6.67
2008	524,553,530,000	7.35
2009	564,009,310,000	7.52
2010	612,818,690,000	8.54
2011	657,189,800,000	7.53
2012	700,677,360,000	6.62
2013	737,682,570,000	5.28

Based on data from the last eleven years, the economic growth of Mamasa Regency has experienced a slowdown, where the Mamasa economy continues to grow positively, but from year to year the amount decreases with an average economic growth of 6.3 percent. The highest economic growth was in 2010 with PRDB reaching 612.81 billion rupiahs and the lowest was in 2003 with an economic growth rate of only 4.08 percent, entering 2013 the economic growth rate of Mamasa Regency was 5.28 percent compared to last year. the rate of economic growth decreased from the previous year which was 6.62 percent or decreased by 1.34 percent. Economic growth in 2013 was due to positive growth in all sectors and subsectors. Until 2003 the economy of Mamasa Regency was still dominated by the agricultural sector in the first place, amounting to 53, 4% of the total GRDP of Mamasa Regency. However, this figure has decreased from 2011, which was 0.56%.

Mamasa is one of the level II regions in the province of West Sulawesi, Indonesia. On the other hand, this area is also one of the areas that is quite lagging behind in relation to public transportation. Road transportation is the main link in and out of Mamasa Regency. In addition to the road to Polewali Mandar Regency, the government has opened a road to the provincial capital of West Sulawesi (Mamuju) and Tanah Toraja, but the road conditions are still far from proper, making it difficult for four-wheeled vehicles to pass.

Table 2. Length of Regency Roads by Surface Type (Km) in Mamasa Regency 2003-2013

Year	paved	Gravel	Land	Other
2003	90.5	757	426	428
2004	120.34	608	434	556.32
2005	138.5	263.33	846.87	475
2006	121.5	283.66	854.1	465.08
2007	154.95	402.11	811.14	356.1
2008	162.7	418.61	826.64	358.1
2009	169.7	421.61	861.64	313.1
2010	169.7	421.61	861.64	313.1
2011	195.16	510.15	1028.36	32.39
2012	198.18	516.65	1051.94	32.39
2013	198.18	516.65	1051.94	32.39

From Table 1. Based on data from the Public Works and Housing Office of Mamasa Regency, it is known that in 2013 good road conditions on total Mamasa roads were minimal where the percentage of roads using asphalt was only 198.18 km or 11 percent of the total road surface, ironically 1051.91 km or 58% of the Mamasa road surface is made of soil and 516.65 or 28% is gravel roads.

Infrastructure development is very important in order to improve the economy of the people of a region, infrastructure infrastructure is not only needed by households and industry so that improving dugaraojab infrastructure infrastructure can bring prosperity and accelerate economic growth. If Dareah Mamasa has adequate infrastructure, then Mamasa will have a greater advantage in trying to attract investment into the area compared to areas that have minimal infrastructure.

The importance of infrastructure in economic growth is still being debated in economic circles, until now there are at least 2 opinions regarding the effect of infrastructure on economic growth based on the results of their respective studies. The first opinion states that infrastructure has a positive

effect on economic growth which is positive Aschauer (1989) and Lynde (1992) and the second opinion states that infrastructure has no significant or even negative effect on economic growth.

2. RESEARCH METHOD

This research was conducted in Mamasa Regency, which is one of 6 regencies in West Sulawesi Province. Mamasa Regency was used as a research location because judging from its geographical location Mamasa Regency became one of the connecting areas between the two Regencies namely Toraja-Mamasa, and Polewasi-Mamasa, Mamuju-Mamasa but this is constrained in the road infrastructure sector which makes access limitations between regions . The data used in this study is secondary data, namely GRDP data based on constant prices for Mamasa Regency in 2003-2013. This data was obtained from the Mamasa Regency BPS (Central Statistics Agency), the Mamasa Regency Public Works and Settlement Agency, various literature, the official websites of Mamasa and West Sulawesi Regencies, and other relevant sources. Library Research, which will be carried out through collecting literature, articles, scientific essays that are closely related to the issues to be discussed. Field research, by visiting directly the agencies related to this research in the form of BPS Mamasa Regency, Public Works Service and other related agencies. Cobb-Douglas Production Function The production function is the physical relationship between production inputs (input) and production (output). The Cobb-Douglas production function is a function or equation that involves two or more variables, where one variable is called the dependent variable (Y) and the other is called the independent variable (X). Completion of the relationship between X and Y is usually by way of regression, where the variation of Y will be affected by the variation of X. scientific essay that is closely related to the problem to be discussed. Field research, by visiting directly the agencies related to this research in the form of BPS Mamasa Regency, Public Works Service and other related agencies. Cobb-Douglas Production Function The production function is the physical relationship between production inputs (input) and production (output). The Cobb-Douglas production function is a function or equation that involves two or more variables, where one variable is called the dependent variable (Y) and the other is called the independent variable (X). Completion of the relationship between X and Y is usually by way of regression, where the variation of Y will be affected by the variation of X. scientific essay that is closely related to the problem to be discussed. Field research, by visiting directly the agencies related to this research in the form of BPS Mamasa Regency, Public Works Service and other related agencies. Cobb-Douglas Production Function The production function is the physical relationship between production inputs (input) and production (output). The Cobb-Douglas production function is a function or equation that involves two or more variables, where one variable is called the dependent variable (Y) and the other is called the independent variable (X). Completion of the relationship between X and Y is usually by way of regression, where the variation of Y will be affected by the variation of X. by visiting directly the agencies related to this research in the form of BPS Mamasa Regency, Public Works Service and other related agencies. Cobb-Douglas Production Function The production function is the physical relationship between production inputs (input) and production (output). The Cobb-Douglas production function is a function or equation that involves two or more variables, where one variable is called the dependent variable (Y) and the other is called the independent variable (X). Completion of the relationship between X and Y is usually by way of regression, where the variation of Y will be affected by the variation of X. by visiting directly the agencies related to this research in the form of BPS Mamasa Regency, Public Works Service and other related agencies. Cobb-Douglas Production Function The production function is the physical relationship between production inputs (input) and production (output). The Cobb-Douglas production function is a function or equation that involves two or more variables, where one variable is called the dependent variable (Y) and the other is called the independent variable (X). Completion of the relationship between X and Y is usually by way of regression, where the variation of Y will be affected by the variation of X. The Cobb-Douglas production function is a function or equation that involves two or more variables, where one variable is called the dependent variable (Y) and the other is called the independent variable (X). Completion of the relationship between X and Y is usually by way of regression, where the variation of Y will be affected

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3. RESULTS AND DISCUSSIONS

Results

1. Geographical, Administrative and Physical Conditions

Mamasa Regency is a division of the Polewali Mamasa Regency in 2002 which was formed based on Law number 11 of 2002 which at that time was still within the territory of South Sulawesi Province. However, at the time of the publication of Law number 26 of 2004 concerning the Establishment of the Province of West Sulawesi in the Province of South Sulawesi, Mamasa Regency was included in the territory of West Sulawesi Province along with four other districts namely Mamuju, North Mamuju, Majene and Polewali Mandar Regencies.

2. An area

Mamasa Regency has the potential of various natural resources, including agriculture, plantations, animal husbandry, inland fisheries, mining and tourism. Administratively, Mamasa Regency currently consists of 17 sub-districts, namely: Messawa, Sumarorong, Tanduk Kalua', Nosu, Pana', Mamasa, Tabang, Mambi, Tabulahan, Aralle, Rante Bulahan Timur, Sesena Padang, Balla, Tawalian, Bambang, Buntumalangka and Mehalaan from 17 sub-districts in Mamasa there are 146 sub-districts with a total area of 3005.88 km2. Of the 17 sub-districts in Mamasa, there are 3 sub-districts that connect Mamasa with other districts and provinces, including Mambi sub-district which connects Mamasa-Mamuju, Messawa sub-district which connects Mamasa-Polewali, and Tabang sub-district which connects Mamasa-Toraja.

Table 3. The area of Mamasa Regency by District

No	District name	Amount	An area	
		Ward/Village	(Ha)	%thd total
1	Sumarorong	10	254.00	8.47
2	Messawa	9	150.88	5.02
3	Pana	12	181.27	6.03
4	Nosu	7	113.33	7.76
5	Tab	7	304.51	10.14
6	Mamasa	12	250.51	8.31
7	Tandukalua	12	250.70	4.03
8	balla	8	120.85	1.98
9	Sesena padang	10	59.53	5.09
10	Tawalian	4	45.99	1.54
11	Mambi	14	142.66	4.75
12	Bambang	20	136.17	4.54
13	Eastern Quarter	7	66.57	1.05
14	Mehalaan	8	162.43	5.41
15	Aralle	12	173.96	5.79
16	Poor dead end	11	211.71	7.00
17	tabuhalan	14	513.95	17.09
	Mamas County	146	3005.88	100

3. Road infrastructure

Roads are a land transportation infrastructure that is very important to expedite economic activities, especially for newly formed newly formed regions such as Mamasa Regency. Increasing development efforts demand transportation facilities to support population mobility and the smooth distribution of goods to and from an area. The length of roads in Mamasa Regency in 2013 was 2,062.66 km, consisting of 153 km of state roads, 110.50 km of provincial roads and 1799.16 km of regency roads.

The area of Mamasa Regency as a whole is mountainous land so that road transportation is the main means of transportation that can connect this area with other regions. Roads are the only means of entering and leaving Mamasa Regency. However, until now the condition of the road is so badly damaged that the Polewali-Mamasa axis road, which is only 93 km long, takes around 5 to 6 hours.

The government has opened a road to the border of Tanah Toraja Regency (South Sulawesi) and to the capital city of West Sulawesi Province (Mamuju), but until now the average condition is still far from good, making it difficult for four-wheeled vehicles to pass, especially during the rainy season. Likewise, the condition of the road that connects the regency capital to the sub-district capital, in general, is still far from good.

Infrastructure based on construction is all asphalt roads. stone/gravel roads and other roads in Mamasa Regency. Based on table 2, based on construction or surface type in Mamasa Regency, it is known that in 2013 Mamasa Regency road construction was dominated by dirt roads with a length of 1050 km or 58% of the road length, gravel roads with a length of 516 km (28%) and asphalt roads with a length of 516 km (28%). 198.18(9%) .

Table 4. Length of roads according to government authorities in Mamasa Regency 2009-2013 (km)

TypeRoad	RoadCountry	RoadProvince	RoadRegency	Total Path Length	District Road Growth
2003	-	163.96	1701.5	1865.46	-
2004	-	163.97	1718.66	1882.63	17.16
2005	-	163.9	1724.03	1887.93	5.37
2006	-	239	1724.04	1963.34	0.31
2007	-	239.99	1724.3	1964.29	0.04
2008	-	239	1756.05	1995.05	31.75
2009	153	86	1766.05	2005.05	10
2010	153	86	1766.6	2005.05	0.55
2011	153	86	1766.06	2005.06	(0.54)
2012	153	86	1799.16	2038.16	33.1
2013	153	110.5	1799.16	2062.66	0

4. Regional Finance and Economy

GRDP is one indicator to determine the condition of the economy in a region in a certain period. GRDP is calculated on the basis of current or nominal prices (ADH) and GRDP on the basis of constant or real prices. GRDP at current prices is used to determine the development of the economic structure, while GRDP at constant prices is used to determine economic growth from year to year. The use of numbers on the basis of constant prices is intended to avoid the effect of price changes, so that the changes measured are real changes in the economy.

Table 5. GRDP and Mamasa Economic Growth for the 2003-2013 Period Based on 2000 Constant Prices (Rupiah)

Year	GRDP Price Constant(Rupiah)	Growth Economy
2003	402,105,350,000	4.08
2004	419,515,050,000	4.34
2005	435,569,990,000	5.70
2006	474,905,610,000	5.70
2007	479,896,180,000	6.67
2008	524,553,530,000	7.35
2009	564,009,310,000	7.52
2010	612,818,690,000	8.54

2011	657,189,800,000	7.53
2012	700,677,360,000	6.62
2013	737,682,570,000	5.28

According to the data table .3 it is known that based on data for the last eleven years the economic growth of Mamasa Regency has experienced a slowdown where the Mamasa economy continues to grow positively but from year to year the magnitude decreases with an average economic growth of 6.3 percent. The highest economic growth was in 2010 with PRDB reaching 612.81 billion rupiahs and the lowest was in 2003 with an economic growth rate of only 4.08 percent, entering 2013 the economic growth rate of Mamasa Regency was 5.28 percent compared to last year. the rate of economic growth decreased from the previous year which was 6.62 percent or decreased by 1.34 percent. Economic growth in 2013 was due to positive growth in all sectors and subsectors.

Mamasa's economic structure is still dominated by the agricultural sector in the first place. In 2005 the role of the agricultural sector amounted to 58.57 percent of the total economy of Mamasa Regency. This figure has decreased by 0.71 percent when compared to the situation in 2004 where the role of the agricultural sector reached 59.28 percent. In the economic structure of Mamasa Regency, the role of the agricultural sector was still quite large during 2006-2010, namely an average of 55.20 percent, although every year its role has decreased.

5. Government Spending on Road Infrastructure

Government spending is very important for economic growth through increasing GRDP. Mainly road infrastructure is one of the supporting physical facilities for the development of an area so that the economic development of a region can be realized. directly infrastructure development itself is a production activity that creates output and employment opportunities. Indirectly, the availability of infrastructure influences the development of other economic sectors, especially basic infrastructure which provides higher productivity compared to advanced infrastructure..

Table 6. Budget for Road Infrastructure (Rupiah) and Development of the Length of Mamasa Road for the 2003-2013 Period

Year	Total Budget	Long Way Total	DeltaJacob's rise
2003	10,521,509,500	1865.46	-
2004	11,124,754,800	1882.63	17.17
2005	12,234,365,400	1887.93	5.3
2006	14,213,579,900	1963.34	75.41
2007	16,201,609,400	1964.29	0.95
2008	17,667,813,050	1995.05	30.76
2009	20,550,364,400	2005.05	10
2010	12,455,042,800	2005.05	0
2011	27,955,894,000	2005.06	0.01
2012	42,589,603,900	2038.16	33.1
2013	56,529,322,000	2062.66	24.5

Infrastructure is Wrong One factor proceed lack of development in a country. The government's role is very important in the economy of developing countries, one of its policies is government expenditure or government spending where government spending policies can encourage an increase in capital investment and production thereby increasing GRDP which will spur economic growth. From table 4.4 it is known that development financing by Mamasa Regency in the field of road infrastructure experienced a drastic increase in 2012 and 2013, amounting to 42.5 billion Rupiah in 2012. This caused changes in road conditions in Mamasa where in 2012 there was an increase in the total number of roads by 33.1 km of good quality roads along 44 km compared to the previous year. and a drastic reduction of 236 roads with severely damaged roads compared to 2011.

The government's decision regarding funding for repairs and funding for new roads depends on how big the project is planned by the government in the annual plan made by the local government. In 2010 there was a decrease in government spending on road infrastructure due to the government program for small-based road repairs, road extension projects were not implemented and funds were sourced only from the DAU and DAK, whereas compared to previous years government spending on infrastructure came from DAU, DAK, Revised APBN and DPDF-PPD Funds.

Most of the government spending on road infrastructure is used to carry out road repairs, this is due to the unstable and muddy condition of Mamasa roads so that there is no continuous improvement of roads in Mamasa Regency considering the condition of Mamasa soil which is unstable and prone to landslides which causes roads to collapse. that had been built quickly fell into disrepair.

4. CONCLUSION

Based on the descriptions that have been explained previously, it can be concluded that: The government expenditure variable in the field of road infrastructure has a positive but not significant effect on the Mamasa Regency's Economic Growth, thus the hypothesis is not proven. The results of the study show that government spending on road infrastructure is still low and its allocation has not been effective, especially causing delays in increasing economic growth. The poor road conditions that dominate have a significant and negative effect on growth in Mamasa District. thus the hypothesis is proven. The low condition of good roads resulted in low achievement of economic growth in Mamasa Regency

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