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# **The Impact of Local Government Expenditure Efficiency on Economics and Poverty Growth of East Java Province (Study of Educational Expenditure, Health and Infrastructure)**

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## **Abstract**

The research aims to test the influence of East Java Propince Budget on growth and poverty. Beside of this, the results of this study will not only estimate the efficiency of the management of the local government on budget, but estimate also how big the effects in increasing the efficiency of spending to society welfare in East Java Province. In this study, the Stochastic Frontier Analysis (SFA) are used as estimation method to the efficiency level for strategy sectors, as education, health, and infrastructure. Then, the Three Stage Least Square (3SLS) are used for estimating how far the effects in increasing the efficiency of spending on society welfare are. Based on the analysis results, for the said three sectors, efficiency action on health sector budget is better than education and infrastructure sector. For those, it shows us the different difficultly level for local government to manage each sector of budget. Education sector is the most complicate in comparison with health and infrastructure sector. However, budget efficiency on education, health and infrastructure sector do not always give positive impact on the society welfare level.

**Key words:** Society welfare, Efficiency on budget, Economical Growth, Stochastic Frontier Analysis (SFA), Three Stage Least Square (3SLS)

## **1. Introduction**

The role of local government in economic development are represented by the magnitude of Revenue and Expenditure (Budget). Acceptance of the budget substantially pointed by withdrawal of public funds, the allocated both through direct and indirect spending on productive sectors and the public. Based on this, the budget is an instrument of public policy. That are called distribution. Otherwise, by sufficient dominant balanced of fund, the increasing on budget expenditure contributed

the local economy activity. Basically, budget expenditure could increase consumption and investment which ultimately resulted the acceleration on growing of Gross Domestic Product (GDP). Furthermore, the growth GDP lead declining on the unemployment rates which finally could reduce the poverty level. Thus, by budget, the local government could actualize the society welfare as reflected in increasing economy activity as well as reducing the number of poor people.

In East Java Province, it seems the role of local government through budget has not shown as the said condition above. Not significantly yet in increasing prosperity through both accelerated economic growth and poverty reduction. Picture 1 illustrates the relationship between the growth of local government's role through budget on economic growth. If there is positive correlation between budget growth with GDP, it should be shows us that much district region of East Java Province spread in quadrant I and III. In fact, exactly there are much district region spreads in quadrant II and IV. It's indicates that there are unclear pattern relationship between the role of local government with economic growth. Beside of that, in two different time periods, year 2007-2008 and 2009-2010, we found that too weak on the relation ship between budget and GDP growth.

**Picture-1.** Relationship between Growth of Budgets and Economic years 2007-2008, and the 2009-2010

GDP Growth of 2007 / 2008		Budget growth 2007/2008
<b>Quadrant IV Low Growth of Budget but High Growth of GDP</b>	<b>Quadrant I High Growth of Budget and GDP</b>	
Blitar, Banyuwangi, Kota Madiun , Kota Pasuruan, Tulungagung, Mojokerto, Tuban, Kota Surabaya, Kota Probolinggo, Kota Mojokerto	Bojonegoro, Ponorogo Kota Blitar, Kota Malang, Trenggalek, Kota Batu	
<b>Quadrant III Low Growth of Budget and Low of GDP</b>	<b>Quadrant II High Growth of Budget but Low of GDP</b>	
Pamekasan, Kediri, Kota Kediri, Probolinggo, Situbondo, Nganjuk, Sidoarjo, Jombang	Sampang, Sumenep, Jember, Bondowoso, Pasuruan, Magetan, Gresik, Pacitan, Malang, Lumajang, Lamongan, Bangkalan, Ngawi, Madiun	
GDP Growth of 2009/2010		Budget growth 2009/2010
<b>Quadrant IV Low Growth of Budget but High Growth of GDP</b>	<b>Quadrant I High Growth of Budget and GDP</b>	
Blitar, Banyuwangi, Kota Madiun , Kota Pasuruan, Jember, Probolinggo, Magetan, Gresik, Kota Blitar, Kota Malang	Bojonegoro, Bondowoso, Pasuruan, Situbondo, Nganjuk, Tuban, Kota Surabaya	
<b>Quadrant III Low Growth of Budget and Low of GDP</b>	<b>Quadrant II High Growth of Budget but Low of GDP</b>	
Pamekasan, Kediri, Kota Kediri, Tulungagung, Mojokerto, Pacitan, Malang, Lumajang, Lamongan, Bangkalan, Ngawi, Madiun, Trenggalek, Kota Batu	Sampang, Sumenep, Ponorogo, Sidoarjo, Jombang, Kota Probolinggo, Kota Mojokerto	

**Source:** BPS (Statistical Centre Bureau), processed

The above facts indicates that the relationship between the role of regional economic activity to be determined by the presence of other factors, something like the efficiency of spending in each of these areas, especially public spending on education, health, and infrastructure. Awareness to the importance of the efficiency of public spending has been a large consensus, so any changes on budget policy always include the efficiency budget aspect as policy targets. Decentralization policy, for example, always expect the achievement of the efficiency of public spending. However, studies on the impact of the policy on the efficiency of budget is still limited (Curristine, T., Lonti, Z., and Joumard, I., 2007). The most complicated issues in the study of efficiency in the public sector budget is the measurement method. However, after the frontier efficiency approach being developed, the measurement of efficiency in the public sector could be done (Kumbhakar and Lovell, 2000), eventhough the output quality aspect usually ignored or being equal on public goods among the regions studied.

Therefore, the main focus of this dissertation is to answer those problems, such as : is it true that the efficiency level of regional financial management resulted in an increase of welfare? Either through economic growth and poverty reduction at the same time. Thus, this dissertation consist two main objectives, as follows :

1. Founding the magnitude rank (score) the efficiency of budget spending in the public sector in all regencies/cities in East Java Province.
2. To know how big the impact of management efficiency ratings in public sector spending on social welfare in East Java Province.

## 2. LITERATURE

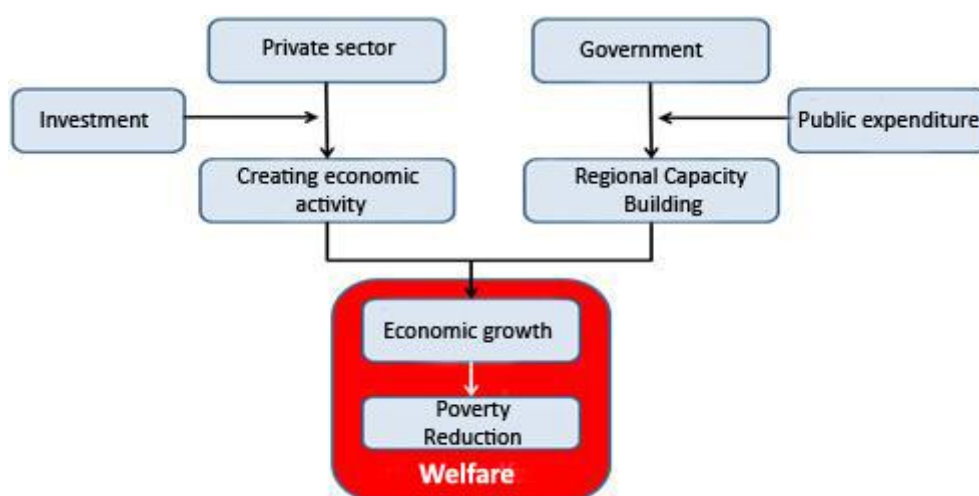
### 2.1. Main actor in Economic Development

In discussion of economic theory, there are two actors in the economic development of a country. Firstly, mainstream view that pointed to liberalism which focuses to the individual freedom in prosperity achievement (Lampert, 1994). It means that the role of private sector is very dominant. But liberation in accessing existing resources causing inequal possession on assets. Inequal possetion of both individual and group on existing resources, make cripple on revenue between each and others, than causing big and large exploration for provit motive only (profit oriented).

Secondly, non mainstream view which argues that centralized management of the economy (hierarchy) is a system based on Marxism-Leninism which the government has full authority to control all economic activity, including both production and distribution. Administrator is the state actors have monopoly on economic decissions, therefore they must have access to more information on demand, supply of goods and raw material as well as production capacity, including the technology (Lampert, 1994).

The economic management in Indonesia based not on two mainstream views above, but mixing both of them. Because of unique typical of Indonesian geographics which much islands (archipelago), muly culture, and other diverse will challenge to be faced. Then raising decentralization era which the obyectives are minimalized the above constrains. There fore, Indonesian national economy, two main actors are leading. Development economy be managed by government and private sector simultaneously. The role of private sector show on investment which create economic activity, otherside the role of government is on public expenditure wich increase the district capacity. Those two roles could increase society welfare through both high economic growth and poverty reduction. For more clear could be seen in the Picture 2.

Picture-2. Top Performers in Economic Development

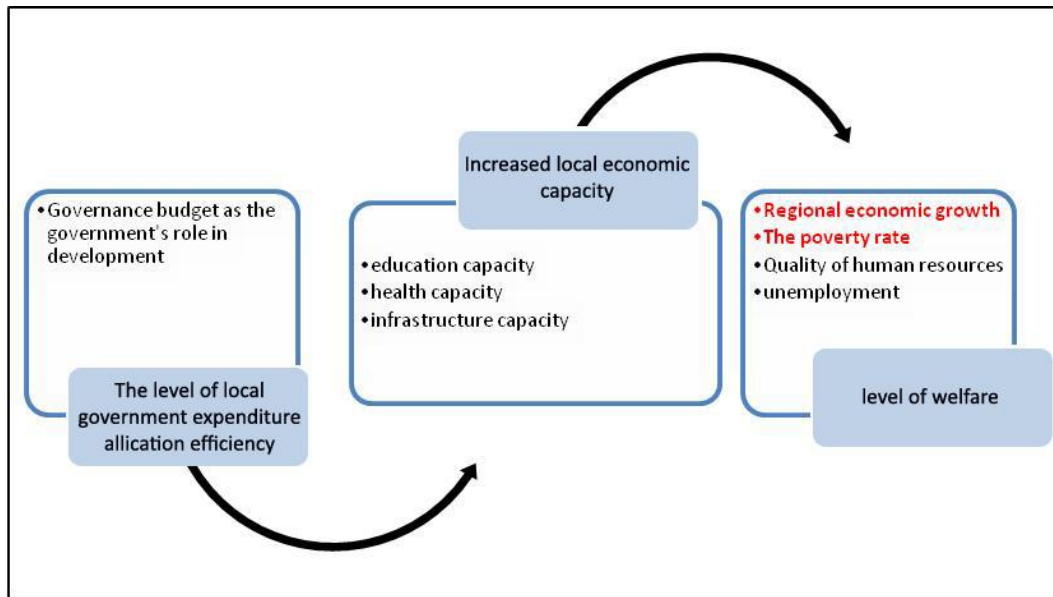


Source: Lampert, 1994, modified

### 2.2. The Relationship Between Efficiency Level on Public Expenditure Sector With Society Welfare

Government's role in society welfare could be done by managing the budget efficiently. It's mean that every regional expenditure must clear for the output. As far as we know that efficiency is output and input ratio. At time of efficiency achieved, it will increase capacity of the local economy such as education capacity, healths capacity and infrastructure capacity. Those increasing capacity above will increase social welfare through regional economic growth and reducing poverty level. Meanwhile, the quality of human resources and unemployment level reflected at the poverty level. When the local poverty level is low, then the human resources is high and the unemployment will also be reduced due to public has more access to get job. More briefly be described in the Picture no 3.

**Picture-3.** Relation ship Between Efficiency Level on Public Expenditure Sector With Society Welfare

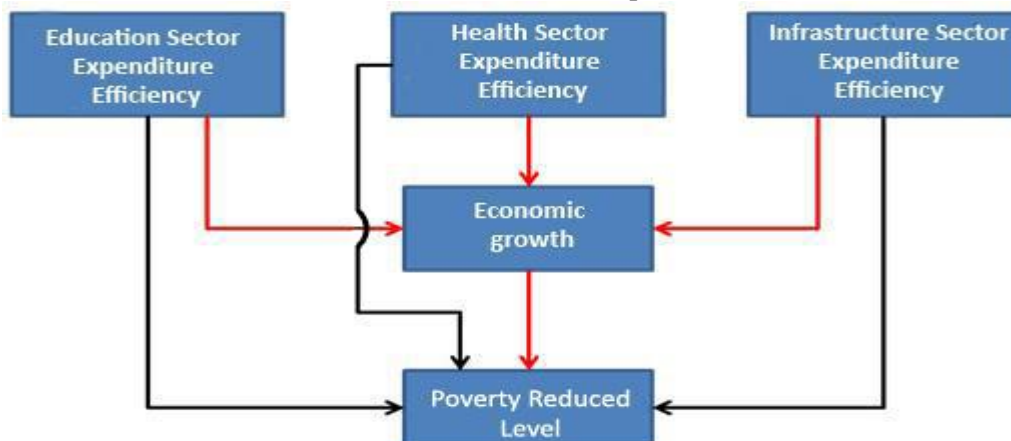


Source: Javarov, E and Gunnarson, V. 2008

### 3. Research Concept Frame

This research focuses to the three strategic budget efficiency, (i) efficiency on educational spending, (ii) efficiency on health spending, and (iii) efficiency on infrastructure spending. Those three of efficiency will directly or indirectly impact on poverty level. Indirect impact affecting through economic growth. Economic growth will affect poverty reduction level. Picture 4 will illustrates clearly to those frame.

**Picture-4.** Research Concept frame



From the above frame there are three main hypothesis in this study, (i) efficiency of public sector spending positively affect on economic growth, (ii) economic growth negatively affect on poverty level, and (iii) efficiency of public sector spending negatively affect on poverty level.

#### 4. METHODS

This study use two methods as analysis, (i) Stochastic Frontier Analysis (SFA), and (ii) Three Stage Least Square (3SLS). First step, SFA is used to estimate the efficiency level. SFA identifies the output and input ratio while considering the deviation such error or noise due to random variation. SFA estimation results appear as value rank on efficiency levels between district/city of East Java Province. The SFA models in this study are (Kumbhakar and Lovell, 2000) are as follows:

$$\ln Y_i = \ln \alpha + \sum_{i=0}^{i=n} \beta_i X_i + \varepsilon_i \dots\dots\dots (1)$$

$$\varepsilon_i = u_i - v_i \dots\dots\dots (2)$$

Where:

- Y: The budget as input (education spending, health spending, and infrastructure spending)
- X: Output of education (numbers of schools, numbers of students, numbers of teachers, elementary (SD), primary high school (SMP), and high school (SMA)), Health output (numbers of medical personel and paramedics, numbers of hospital, numbers of health centre), infrastructure output (fresh water access, irrigation, electricity, good road as propotion)
- ε: Error
- v: Statistical distribution error
- u: Inefficiency

Second step, 3SLS model use to estimate the efficiency impact of budged management on economic growth, reducing poverty level and society welfare. Specification of said model consist of two simultaneous equation as follows:

$$Grt = f( eff_i ) \dots\dots\dots (1)$$

$$Kms = f( eff_i, Grt ) \dots\dots\dots (2)$$

Where:

- Grt : Economic growth
- Eff : Efficiency score of budget management
- Kms : Poverty percentage of total population
- i : Education sector, health sector, infrastructure sector

Based on those (SFA and 3SLS) analysis method, the secondary data to be used in this study. The said data are budget form of each district/city in East Java Province, particularly education spending, health spending, and infrastructure spending including the each output of those sectoral spending. By the way this method also need economical growth data and poverty level data of each district/city in East Java Province.

#### 5. Results And Discussion

##### 5.1. Discussion on Statistics Results

There are two statistical estimation results, i.e. (i) the estimation of Stochastic Frontier Analysis (SFA), and (ii) the estimation of Three Least Square (3SLS). Firstly, Table 1 shows the estimation results of public expenditure efficiency by SFA method.

**Table-1.** Efficiency Results of Public Expenditure Estimation by SFA Method

NO	YEAR	EFFICIENCY EQUATION (all equations in the $\ln$ form)
<b>Education spending</b>		
1	2006	Education Spending = 1.446756 – 0.8147929* number of schools + 3.331528** number of students – 1.025967* number of teachers + (inefficiency error + error distribution statistic)
	2008	Education Spending = -1.004894 – 1.906332* number of schools + 2.28247** number of students + 1.222041* number of teachers + (inefficiency error + error distribution statistic)
	2010	Education Spending = -1.004894 – 1.906332* number of schools + 2.28247** number of students + 1.222041* number of teachers + (inefficiency error + error distribution statistic)
<b>Health spending</b>		
2	2006	health spending = (1.22e +07) – 1.615017* number of health centers – 1.220156 the number of medical personnel * + 5.14787** number of paramedic staff + (inefficiency error + error distribution statistic)
	2008	health spending = 5.007604 + 1.511728* number of health centers – 0.8738893* the number of medical personnel + 4.893496** number of paramedic staff + (inefficiency error + error distribution statistic)
	2010	health spending = 1.051745+ 1.552213* number of health centers – 0.0259388* the number of medical personnel + 2.894991** number of paramedic staff + (inefficiency error + error distribution statistic)
<b>Infrastructure spending</b>		
3	2006	Infrastructure spending= 0.2069826 + 4.189232* Access to fresh water + 0.5077458 irrigation * – 0.070071 electricity * +1.096695* the proportion of good road+ (inefficiency error + error distribution statistic)
	2008	Infrastructure spending= 0.2392471 + 0.9402983* Access to fresh water + 5.047905* irrigation – 0.3264561* electricity +0.4464537* the proportion of good road + (inefficiency error + error distribution statistic)
	2010	Infrastructure spending= (2.00e+07) + 0.0273623* Access to fresh water + 8.066752* irrigation – 0.3209033* electricity – 0.0219389* the proportion of good road + (inefficiency error + error distribution statistic)

Description:

\*\* = Significant with an error rate of less than 5%

\* = Significant with an error rate of 5% -10%

Source: Analysis Result, 2013

Based on Table 1, all of public expenditure equation indicate that the input component (education expenditure, health expenditure, and infrastructure expenditure) significantly influence at the error rates less than 10% to the output component. It's mean that all of independent variables significantly influence to dependent variables

Secondly, the results of the simultaneous equations (3SLS) that estimate the impact of the budget management efficiency on society welfare presented in Table 2 as follows.

**Table-2.** Estimation Results of Impact on Budget Management Efficiency Against Society Welfare by 3SLS Method

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval ]
Growth06					
efP06	-.0240261	.0180652	-1.33	0.184	-.0594332 .0113811
efK06	.0002015	.0137768	0.01	0.988	-.0268005 .0272034
efInf06	.0675045	.0280871	2.40	0.016	.0124549 .1225541
_cons	1.780675	.0440925	40.38	0.000	1.694255 1.867095

KMS06_____						
efK06	-.070105	.0517743	-1.35	0.076	-.1715808	.0313708
efP06	.014414	.068676	0.21	0.834	-.1201885	.1490164
efInf06	-.1912697	.1094912	-1.75	0.081	-.4058686	.0233292
Growth06	-.8700606	.4310815	-2.02	0.044	-1.714965	-.0251565
_cons	4.506956	.7852972	5.74	0.000	2.967802	6.04611

Source: Analysis Result 2013

Where:

- ef : Efficiency
- P : Education
- K : Health
- Inf ; Infrastructure
- Kms : Poverty level

Based on the Tables 2, there are two main equations, i.e. equation of economic growth (Growth) and poverty (KMS). Both of these equations are simultaneous, it means that there is one variable be multiple functions, as well as the independent and dependent variable. The dual function variable in this equation is economic growth (Growth). The details are as follows:

- a. Impact of Efficiency of Public Spending Management (Education, Health, Infrastructure) against Economic Growth

**Growth**

$$= 1.780675 - .0240261 \text{ efP} + .0002015 \text{ efK} + 0.0675045 \text{ efInf} + u_i - v_i$$

- b. Impact of Economic Growth against Poverty

$$\text{KMS} = 4.506956 + .014414 \text{ efP} - .070105 \text{ efK} - .1912697 \text{ efInf} + u_i - v_i$$

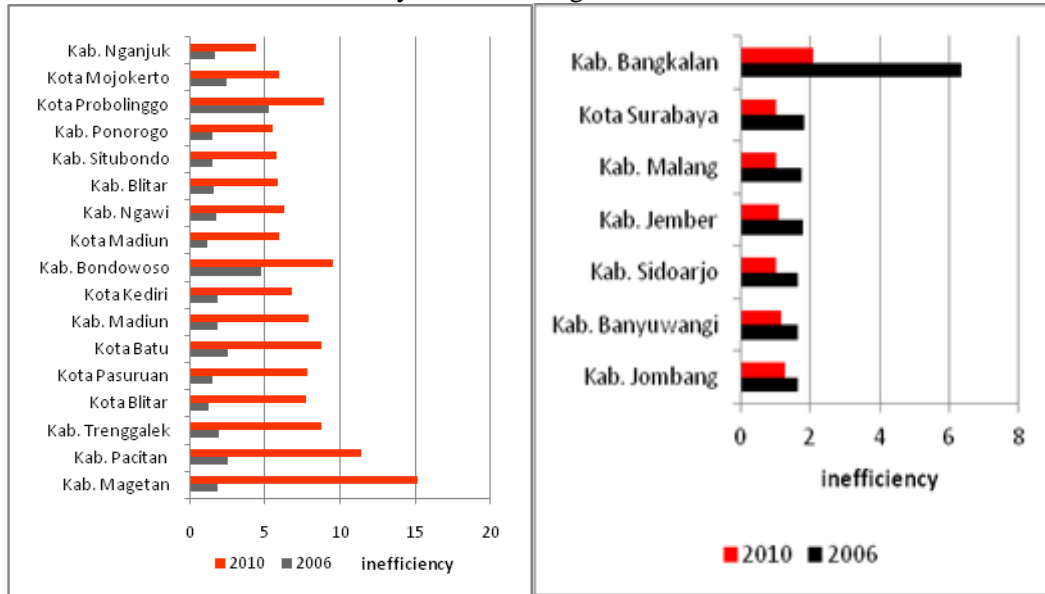
In this study, the said independent variable which significantly influenced the dependent variable if it has value of  $P > |z|$  less and/or equal to 10%. Otherwise, it call not significantly influence if the value of  $P > |z|$  more than 10%. Therefore, based on statistic estimation, the significant variable which influence economic growth is efficiency of infrastructure spending only. Other variables (education and health) found not significantly influence the economic growth. Furthermore, the variables which significantly influence poverty are efficiency of infrastructure spending, health spending and economic growth, while the others found not significantly influence to the said poverty. Because of chi-square value are low, therefore all models are feasible to be used to estimate the impacts.

## 5.2. Estimation Results of the Public Budget Management

Based on SFA model's estimate, found value (the efficiencies score) of the three strategic sectors (education, infrastructure, and health). The districts/cities could be said efficient when the value (the efficiencies score) closed to one (1). It's means the result of input and output ratio of budget must found one (1). If the value found more than one (1), so no more efficient those public management which being valued.

Firstly, picture 5 shows us the efficiencies level of education sector at East Java Province for years 2006-2010. From these picture found that local governance management for education sector can not said efficient yet. Almost all of regencies/cities of East Java Province have those experience. From 38 regencies/cities in East Java Province, found only 7 (seven) regions that the efficiencies are increase (efficiencies score closed to one), 17 (seventeen) regions found the efficiencies are decrease (efficiency score removed far from one), and 14 (fourteen) regions found the efficiency have no change from the previous position. The seventh regencies/cities which have more efficient on management for education sector are as follows: (1) Kab Bangkalan, (2) Kota Surabaya, (3) Kab Malang, (4) Kab Jember, (5) Kab Sidoarjo, (6) Kab Banyuwangi, and (7) Kab Jombang.

**Picture-5. Efficiency level of Regencies/Cities in East Java**



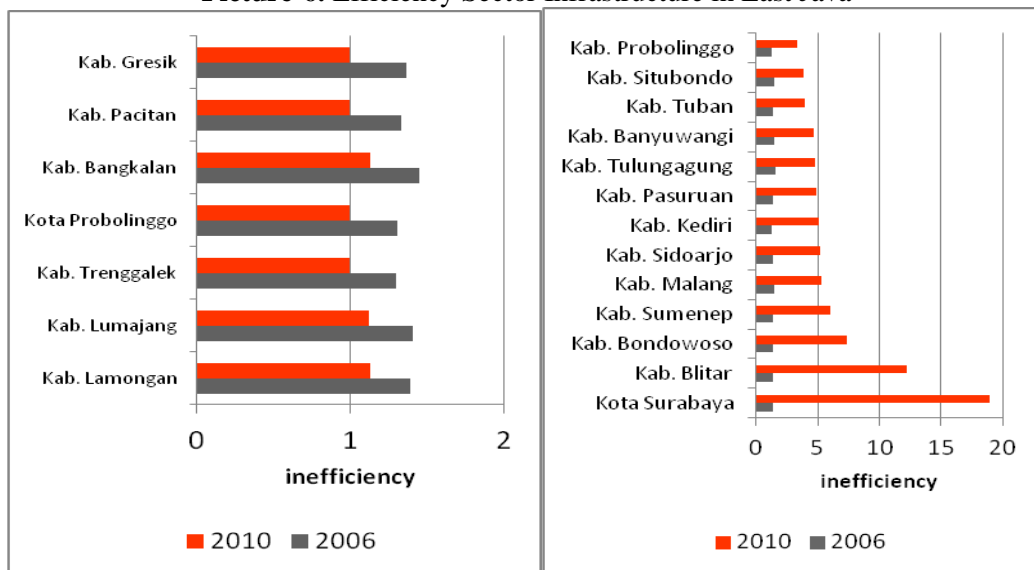
Decreased level of Education Efficiency

Increased level of Education Efficiency

Source: analysis result, 2013

Secondly, Picture 6 shows the efficiencies level of infrastructure’s sector of East Java Province for years 2006-2010. From these picture is known that local governant management for the said sector slightly better in comparison with education’s sector. It is shown by number of regencies/cities which have decreasing on his efficiencies level (more inefficient) less than in the education’s sector. From 38 regencies/cities in East Java Province found 7 (seven) regions which the efficiencies are increased (efficiency score closed to one), 13 (thirteen) regions found the efficiencies are decreased (efficiencies score removed far from one), and 18 (eighteen) regions found no change from the previous position for the efficiencies. However, globally, for governant management of infrastructure’s sector in East Java Province could not be said efficient yet.

**Picture-6. Efficiency Sector Infrastructure in East Java**



Increased levels of Infrastructure Efficiency

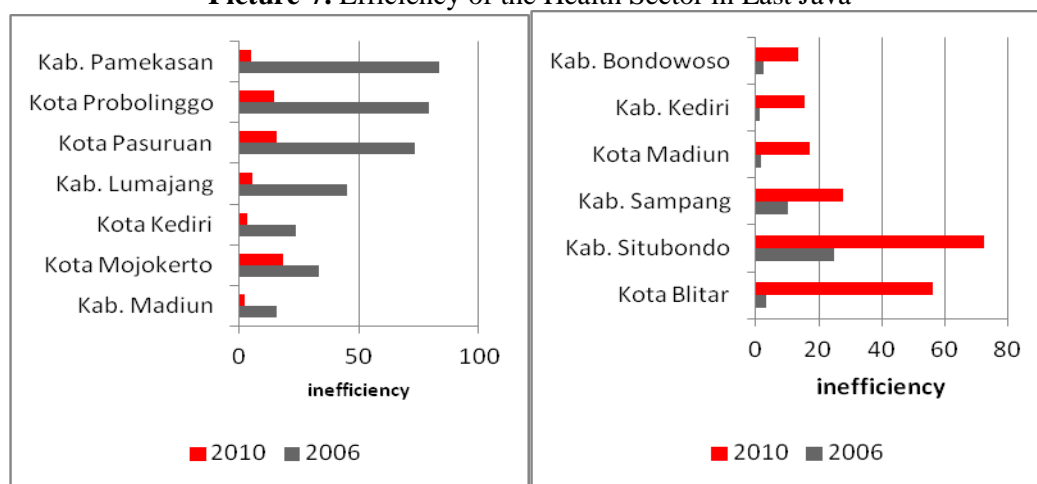
Declining levels of Infrastructure Efficiency

Source: Analysis Result, 2013



Third, Picture 7 shows the efficiencies level of health sector of East Java Province for years 2006-2010. From these picture is known that local governant management for health sector is better than both infrastructure and education’s sector. Those condition are shown by number of regencies/cities which decreasing on efficiencies level (more inefficient) less than both infrastructure and education’s sector for years 2010. From 38 regencies/cities in East Java Provinnce found 7 (seven) regions which the efficiencies are increased (efficiencies score closed to one), 6 (six) regions found the efficiencies are decreased (efficiencies score removed far from one), and 25 (twentyfive) other regions are still at their previous position for the efficiencies.

**Picture-7.** Efficiency of the Health Sector in East Java



Increased levels of health Efficiency

Declining levels of Health Efficiency

Source: Analysis Result, 2013

For more easier to interpretation, table 3 shows the comparison for the above explanation.

**Table-3.** The Number of Regencies/Cities of East Java Province with this own Efficiencies Level for Years 2006 -2010.

Efficiency level	For Sector		
	Education	Infrastruktire	Health
More Efficient (score closed to one)			
More Inefficient (score removed far from one)			
Remain at the previous position			
Totally			

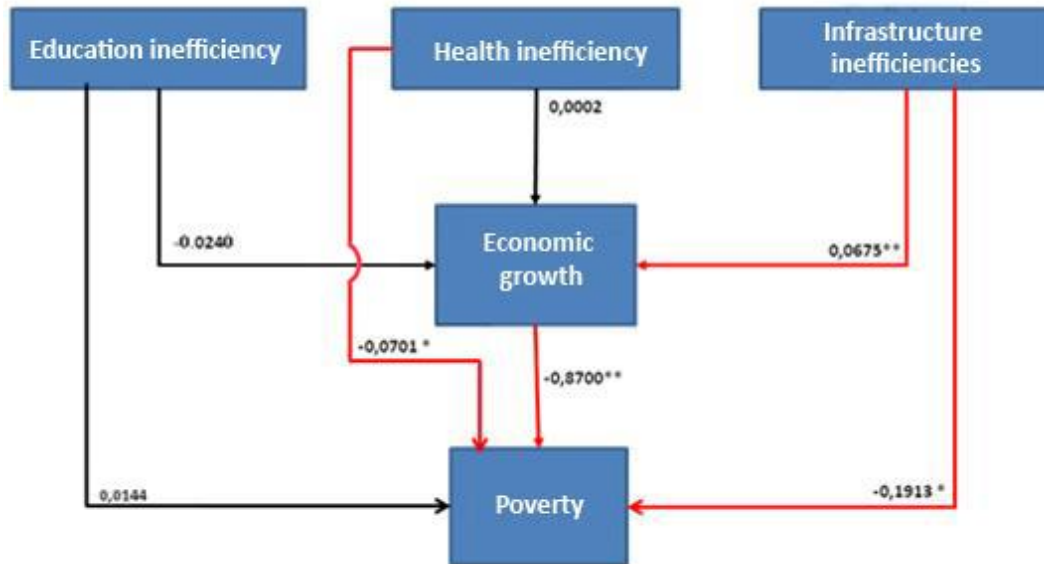
Source: Analysis Result, 2013

The above table 3 show that on years 2010 the number of regencies/cities which have less decreasing efficiencies (more inefficient/ the efficiencies score removed far from one) is health sector only. The number found 6 (six) regions. Beside of this sequentially are infrastructure’s sector 13 (thirteen) regions and education’s sector 17 (seventeen) regions. Those phenomenon are caused by diffrences level of difficulty in each management type, whereas the education’s sector being the difficultiest in comparison with both infrastructure and health’s sector. There are too much output’s indicator to be definite which caused the local governant’s management more difficult. So that are for infrastructure’s sector in coparison with health’s sector.

## 6. Impact of Efficiency Against Welfare

Based on the three stage least square analysis (3 SLS), found that the efficiency of education spending, infrastructure spending, and spending on health is not always a positive effect on the welfare level, the impact of efficiency spending on welfare's level; shows at Picture 8.

Picture-8. Efficiency Impact Against Welfare



Description:

\*\* : Significant with an error rate of 1-5%

\* : Significant with an error rate of 5-10%

Source : Analysis Result, 2013

Firstly, the efficiency of the infrastructure budget allocation affect on poverty by direct and/or indirect way. The indirect affect occur through economic growth. The correlation between score infrastructure efficiency with poverty level is in negative mark. It's mean, that the level of infrastructure's budget level is high, the poverty levels will decrease then. In other words, increasing the efficiency of the budget on infrastructure will lead increased poverty. In one construction of roads, for example, to reach the efficiencies of budget, let say 10 labours required. At time of government as the contractor take 13 labours, on the same situation and condition, the inefficiencies will be faced. Ofcourse the positive effect will be founded in shortterm because it can reduce the number of local unemployment, but for longterm, let say for one period of the government outor (5 years), so it can swell the budget. It's mean for longterm, the negative effect ready as heavy problem. Government's budget comes from his own citizens tax. So for inefficiencies budget, need bigger cost which finally make people sorrow. It's means those condition increase the poverty level. The indirect effect of infrastructure budget efficiencies against poverty level, which must pass by economic growth (vide picture 8), getting negative correlation index 0.87. This, number give us meaning that at time of economic growth increase one percent, so the proportion of the poverty level will be reduced by 0.87.

Increasing of economic growth is closely related to the increasing of economic activity, and ofcourse will decrease the poverty level. The higher of economic activity is positively related to investment level. The higher investment will increase the improving people mobility, and ultimately reduced number of unemployment. Finally the people income increase and thew expect welfare will be reached at the following time.

Secondly, for health sector, the efficiency of the health score directly affects poverty without passing through the economic growth. Efficiency of the health budget is one kind of longterm investment in the human resources (human investment), so the influence it can not be felt directly in shortterm, but the impact would be felt in the longterm.

Efficiency score of health has a direct and negative impact on the poverty at rate of 0.0701. So, more inefficient of health sector budget, poverty will decrease then. When the efficiency of the health

score increased by one (1), the poverty rate will decrease by 0.0701 percent. It's mean, that at time of the output of health which being gave for subsidy has declined, the access for the poor to health care more difficult. Other words out of pocket community in access to health care is also expensive.

On the reverse side, when there is inefficiency on health's budget goes by, in this case the budget being distributed in the form of increased health funding, the burden of the government's budget will also increase. It will result in improved access of poor health. However, it should be underlined that those government's health budget which grow up, essentially a collective burden which will be borne by the public.

Meanwhile, health is one of the factors that affect labour productivity. When health quality of labour is in bad condition, the productivity will decrease (lower) and vice versa. So, the goodness of health quality would be made more productive the people to encourage the higher income. By the higher productivity is expected reduce the percentage of poverty level.

Thirdly, picture 8 shows us that the efficiency on education sector does not affected directly on economic growth (efficiency score – 0.0240), even on poverty (efficiency score 0.0144). However, in not direction way the said affect clearly show. Poverty increased by economic growth in efficiency score – 0.87. in the achievement of social welfare need another stimulus and accompanied by good economic condition. Basically, efficiencies on education sector will only increase community foundation capacity.

Decreased poverty could be changed by economic recovery in one region. By improving economic growth the skills in the community will drive to pass through. Community skill reaches by education way which identically to local government's role in providing education facilities.

Limitations being faced in this study are measurement on the efficiency of public spending, especially on education and health sector whereas quantity aspect being consider rather than the quality aspect. Then the analytical models considers only on the government's role not include the private sector economic activity.

## **7. Conclusions And Recommendations**

### **7.1. Conclusion**

Based on analysis of the discussion, conclusions of this research are as follows :

1. Efficiency improvement of governance on health sector budget is better than infrastructure and education. There is an indication that managing on education spending be the most complicated in comparison with infrastructure and health.
2. The decrease of efficiency in the education and health sector most likely caused by the improvement in the quality services. Otherwise declining in efficiency of infrastructure sector caused by an increasing in the procurement cost of raw materials.
3. The improvement of efficiency level in education and health sector had no impact on economic growth.
4. There is indications that improving on the efficiency of health sector actually has increased the number of poverty.
5. Efficiency improvements in infrastructure intended on increasing the number of poor people.

### **7.2. Recommendation**

1. Improvements on the efficiency of public service needs to be done carefully. Not only for calculation of cost is reduction but need to consider the aspect of improving quality on services. To increase in health care satisfaction, for examples will increase the cost of healthcare. However the satisfaction's level itself is difficult to measure quantitatively.
2. The main consideration governance of public budgets, particularly education and health, preferably in the effectiveness aspect, after which it determined the level of efficiency. Therefore, the Minimum Service Standards (MSS) being important to accompany the performance improvement of public service efficiency.
3. Further research still needed related to the measurement of efficiency which consider account aspects of quality.

4. The private sector's role to be other components which should be included in the analysis model of the efficiency impact on welfare.

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