UDC 334

THE ECONOMIC GROWTH DETERMINANTS - DYNAMIC PANEL APPROACH: A CASE STUDY OF DISTRICT/CITY IN EAST JAVA, INDONESIA

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ABSTRACT
The economic growth is one of the most important variables in macroeconomics. Some variables affect the high and depressed economic growth. In this study, an analysis of the determinants of economic growth variables using dynamic panel data method is analyzed. The case study used was City and Regency in East Java Province in 2010 - 2016. The results of the study were obtained in the variables in all cities and regencies in East Java, the variable productivity of labor had a positive and significant effect; education variables have a positive and significant effect; capital expenditure variables have a positive and significant effect; investment variables have a positive and significant effect; and the variance of the population has a positive and significant effect. Meanwhile, the comparison between the agricultural sector and the industrial sector in East Java shows that there are differences in the significance of the determinant variables that influence economic growth between the City / Regency industrial sector and the City / Regency agricultural sector in East Java Province. Some determinant variables in the City / Regency of the agricultural sector obtained insignificant results in determining economic growth. Whereas for the City / Regency the overall industrial sector shows significant results in determining economic growth variables.

KEY WORDS
Economic growth, average length of study, consumption, dynamic panel data, general method of moment, East Java.

The definition of economic growth is an increase in production in terms of output per capita in a period marked by the relationship of other factors that also experience an increase (Jhingan, 2003). In general, economic growth is a benchmark used to influence the success of regional or state development. If economic growth in years is always increasing this indicates that an area can develop and extend to regions or countries that are able to be autonomous in terms of sustainable growth. The causal factors of economic growth alone have a diversity of resources, namely natural resources and human resources. In addition, even distribution of economic growth to avoid large urbanization - a magnitude that can trigger crime and unemployment rates is a problem of the government to provide policies that refer to inclusive development. In this case, the government must be a mediator to pursue the success of economic development.

The Java Island is one of the most populous islands in Indonesia. More than 80% of the total Indonesian population is on the Java Island. In addition, the Java Island is the center of the economy in Indonesia. The Java Island is also a place for the world of education. Its strategic position makes the Java Island the target of transmigration for residents outside Java to gain money for the sake of a sustainable life. Access to infrastructure growth on the Java Island is also the fastest among other islands. The diverse topographic area of the Java Island is a source of living, especially in the agricultural sector.

According to the Central Bureau of Statistics (BPS), economic growth in several provincial capitals of the Java Island is the backbone of national economic growth. This indicates that the economy of the Java Island is better than the level of other island economies. In addition, the East Java province is a diverse culture where the area is divided into 3 regions, namely Mataraman area, Arek culture, and Pandalungan. Where the three neighborhoods have a kind of social backgrounds and supports. East Java also has a

topography that is different in distribution between regions. From these different distributions will form a different economic activity and will be a unique area for research.

East Java also has quite interesting tourism resources that can offer benefits to the economic system of the region, or region so that the process of economic development can take place. Figure 1 is a chart of national and East Java economic growth in 2010-2016. From the graph above shows a downward trend in several years on the value of economic growth from the 2010-2016 study period at the National and East Java Provinces.
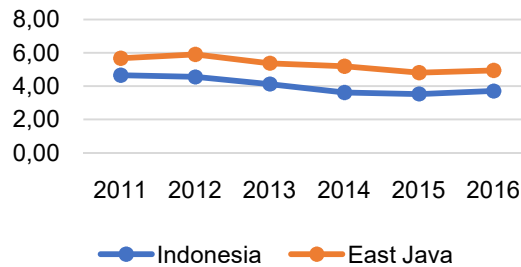

Figure 1 – National and East Java Economic Growth 2010-2016
(Source: Badan Pusat Statistik Provinsi Jawa Timur, 2017d)

The existence of harmony between the national and provincial levels in increasing economic growth indicates that there is a relationship between the national economic level and East Java where East Java Province sustains an increase in economic growth.

The following is about education in East Java. The pursuit is an overview of the average years of national and East Java schools in 2010-2016. From Figure 2, the average length of school that occurred in East Java was always lower from year to year during 2011 - 2016 compared to the average length of schooling nationwide. Only the chart indicates an upward movement from year to year. The average length of the school indicates the higher education achieved by people in an area. Thusly, in East Java, the average level of education in the community is getting higher which can mean that in East Java more and more people are highly educated. With the addition of quality human resources through education there will be an increase or innovation in the production of commodities and services.
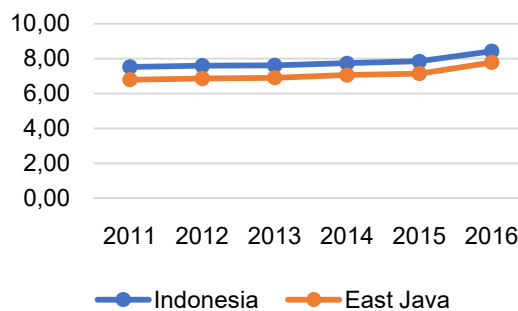

Figure 2 – National and East Java Length of Study 2010-2016
(Sources: Badan Pusat Statistik Provinsi Jawa Timur (BPS), 2017e)

Education is also a human capital, which is contained in neoclassical theory at this time, which is able to create specialties in the form of technology and other things that are able to develop economic potential. Achieving the average length of school that is increasing will form the quality of a quality workforce.

Improved economic growth is likewise established for the use of the masses. An increased consumption pattern will have an effect on income and welfare, which will eventually end in economic growth. Figure 3 is a picture of people's consumption in East Java. Seeing differences in consumption patterns where at the national and East Java

provinces experienced a decline in the 2010-2015 study period, but there was an increase in 2016. The advance in economic growth performance stemmed from strengthening domestic consumption, especially household consumption.
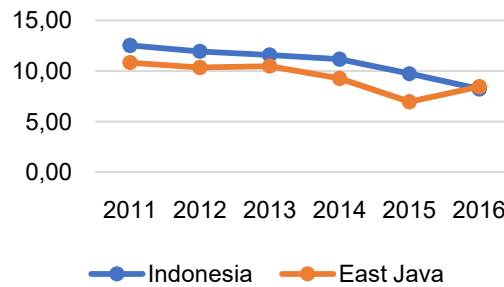

Figure 3 – National and East Java Household Consumption 2010-2016
(Source: Badan Pusat Statistik Provinsi Jawa Timur, 2017c)

To achieve economic growth achieved, household consumption must be stimulated by the creation of economic growth. To stimulate consumption, the government must intervene in spending on productive matters in this case capital expenditure.

In some cases, there are differences in the value of changes in economic growth. Some sectors have higher economic growth compared to other sectors. This is because there are differences in output and input in each sector. So that the difference causes different productivity values.

Cities and districts in the province of East Java have two main sectors as contributors to the economy, namely the industrial sector and the agricultural sector. Some cities in East Java rely on the productivity of the industrial sector, while some other cities rely on the agricultural sector. This is an interesting difference to experience how the determinant variables of economic growth in the industrial sector and the agricultural sector.

Table 1 – Comparison of East Java and National Industrial GRDP Rate

Industrial Sector	2011	2012	2013	2014	2015	2016
East Java	4.57	6.73	5.85	7.67	5.63	4.51
National	6.26	5.62	4.37	4.64	4.33	4.26

Source: Badan Pusat Statistik Provinsi Jawa Timur, 2017b.

Table 1 is a comparison between the growth rate of the East Java and National industrial sectors seen in the comparison table of the East Java and National GRDP (Gross Regional Domestic Product) rates of the industrial sector. It is seen that when compared to the rate of the industrial sector at the National level, East Java's industrial sector in 2011 was indeed slightly below the National level. But in 2014 the East Java industrial sector experienced a fairly high increase, and had a difference of almost 2 times that of the National, although up to 2016 the figure was 4.51%, the figure is still above the National figure.

As for the agricultural sector, it is depicted in Table 2. It is seen that the figure for the province of East Java in 2011 was higher than the figure at the national level, but in 2013 it came in 2016 with a decrease in the GRDP rate in the agricultural sector in East Java. GRDP growth rates in the agricultural sector tend to decline in 2013 this is likely due to farming land being diverted more to other sectors. Thus reducing agricultural productivity in the past two or three years. This shows that the agricultural sector in East Java has been superseded by other sectors that reach up the support of economic actions. From these data, it can be seen that the agricultural sector and the industrial sector in East Java in 2011-2016 have mutually inversely grown.

Meanwhile, several studies have been conducted to determine the influence of determinant variables on economic growth in various regions. The first is a study written Sabir, Yustika, & Maskie (2015)with the title "*Local Government Expenditure, Economic*

Growth and Income Inequality in South Sulawesi Province" suggesting that results that reveal government spending play an important role in terms of economic growth and income inequality. The results obtained in the study of Sabir, Yustika, & Maskie (2015)is that government spending has a significant positive effect on economic growth and income inequality. While economic growth has a negative effect on income inequality. And research conducted byButkiewicz & Yanikkaya (2011)with the title "*Institutions and The Impact of Government Spending on Growth*" said that total government spending has a negative effect on growth in some developed countries and refers to a neoclassical theory of growth depending on resources including energy work and natural resources and also technology. Therefore, government expenditure is not a reference to economic growth. In addition, in the writing ofButkiewicz & Yanikkaya (2011)it is said that the existence of government spending can replace the role of the private sector, causing crowding out.

Table 2 – Comparison of East Java and National Agricultural GRDP Rate

Agricultural Sector	2011	2012	2013	2014	2015	2016
East Java	4.02	5.14	3.06	3.54	3.29	2.35
National	3.95	4.59	4.2	4.24	3.75	3.36

Source: Badan Pusat Statistik Jawa Timur, 2017a.

The opinion of Teixeira and Queiros in his research with the title "Economic Growth, Human Capital and Structural Change: A Dynamic Panel Data Analysis" that human capital and the productivity of a country's productivity are the determining factors for economic growth(Teixeira & Queirós, 2016). The interaction between human capital and structural changes in technology-intensive industries has a significant effect on economic growth. Nevertheless, significant influence depends on the duration of the period and the type of land. Whereas in developed countries with the period of 1960-2011, the impact of interaction between human capital and positive structural changes. In contrast, in the Mediterranean country in the period 1990-2011 with a shorter period of human capital is significantly positive with economic growth, simply human capital with high technology specialization and knowledge-intensive orientation is negative direction. Then different studies were carried out byPelinescu (2015) with the title "*The Impact of Human Capital on Economic Growth*" that in European countries there is a positive relationship between GDP (Gross Domestic Product) per capita and innovative capacity of human capital and qualifications of employees. But the negative relationship occurs in education expenditure in GDP and GDP per capita is possible because of heterogeneous occurrences in each state.

According toRehman (2016) in his research entitled "FDI and Economic Growth: Empirical Evidence from Pakistan" the findings were made that Foreign Direct Investment, human capital, and exports are important elements of the determinants of economic growth. In addition, the next results obtained by the VECM method say that it is actually not FDI that determines economic growth but economic growth that affects FDI. And also with weak human capital will have an influence on economic growth in Pakistan. Another thing in the research ofTriyanto, Wahyudi, & Ananda (2017)stated that the research entitled "The Effect of Capital Expenditure on Local Own-Source Revenue: Study in East Java Indonesia" with the results of capital expenditure divided by two parts, namely productive capital expenditure and unproductive capital expenditure has an influence on gross regional domestic products (Triyanto et al., 2017). The second result of the research fromTriyanto, Wahyudi, & Ananda (2017)also said that productive capital expenditure and unproductive capital expenditure have an influence on regional original income through gross regional domestic products through path analysis tools. Another research was done byAttari & Javed (2013)entitled "*Inflation, Economic Growth, and Government Expenditure of Pakistan:1980-2010*" with the Johansen cointegration and Granger Causality analysis method in the long run between inflation, economic growth and government spending in development is significantly positive. However, in the short term inflation does not affect economic growth, but affects government spending.
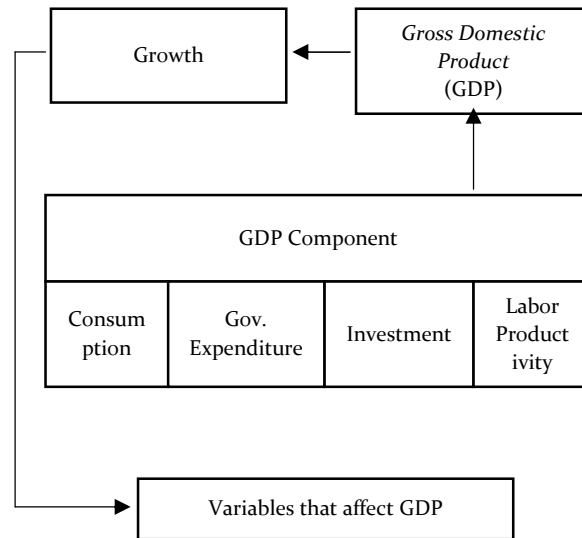
Figure 4 – Conceptual Framework

Figure 4 is the conceptual framework of this study. As explained in the previous section that GDP is one indicator of economic growth and GDP has several components in its calculation. According to GDP theory has the components utilized to count the value of GDP, there are still many elements that influence changes in GDP value from year to year. This is what underlies this research.

In addition to the main factors, namely, consumption, investment and government spending, the authors also refer to other variables namely population, education, and labor.

Based on previous studies, this research attempts to analyze how the differences and determinants of economic growth variables in the industrial sector and the agricultural sector in East Java Province.

LITERATURE REVIEW

Economic growth is a development in an economic system that increases the production of goods and service and improves the community welfare (Sukirno, 2005). Hence, economic growth assesses to what extent an economic development from one to another period in a country to produce goods and services. This increasing ability is conducted by adding production factors in terms of number and qualityAn investment will encourage the increase of capital goods and technology had also more improves. Also, the number of the worker is getting higher as a result of population growth along with the increase in their quality of education and skill.

Economic development can be defined as the improvement of Gross National Product/Gross National Income without considering whether that improvement is bigger or smaller than the rate of population growth or whether the alteration of economic structure happened or not. National output (Y) is the symbol of economic development which is the function of a physical method, labor, and technological advancement which will achieve (Dornbusch, 2001Later on, an investment is an important factor that influences the creation of physical capital, which means high economic development may have a positive influence on the absorption level of labor as shown in this following model:

$$Y = A.F(K,L)$$

Y stands for national output (area), K stands for physical capital, L stands for labor, and A stands for technology. Y will increase if the labour or physical capital increases too. An investment is an important factor that influences the procurement of physical capital.

Technological advancement followed by the increase of A will also increase. For that matter, national economic development may derive from the input growth and the development of technological advancement which is called a total development of productivity factor. Solow Neo-Classical Growth Model) explains that the function of standard aggregate production is similar to what used in Lewis' modern vector equivalence as follows:

$$\mu t \ \alpha \ 1-\alpha \ Y = Ae \ . \ K \ . \ L$$

Where: Y = Gross National product; K = The stock of physical capital and human capital; L = Not-skilled labor; A = Constant that reflects the level of basic technology; μt e = technological advancement rate; α = output elasticity towards model, which is the percentage of PDB increase derives from 1% of physical capital and human capital addition.

According to the traditional Neo-Classical theory, output growth always derives from one or more than 3 factors, namely quality, and quantity of labor improvement, capital addition (saving and investment), and technological refine (Todaro, 2000).

Teixeira dan Queiros in their research entitled "Economic Growth, Human Capital and Structural Change: A Dynamic Panel Data Analysis" state that human capital and productivity specialization of a country is a determining factor of economic growth (Teixere & Queiros, 2016). The interaction between human capital and structural change in the technology-intensive industry has a significant influence on economic development. However, a significant influence depends on the duration of a period and type of a country. The impact of the interaction between human capital and structural change In a developed country during the period of 1960-2011 is positive. Conversely, in the Mediterranean country during the period of 1990-201, which is shorter than the previous period, human capital has a positive and significant influence on economic growth but has a negative influence on the specialization of high technology and orientation of knowledge intensive. Later on, a different study is conducted by Palinescu (2015) entitled "The Impact of Human Capital on Economic Growth" that in the European country, there is a positive relationship between GNP per capita and innovation capacity from human capital and qualification from an employee. However, a negative relationship on education output in GNP and GNP per capita is possible since the heterogeneous in every Country.

METHODS OF RESEARCH

The analytical instrument applied in this study to define the outcome of economic growth determinant variables is a dynamic panel data method.Independent variables used are education, household use of goods and services, labor productivity, capital consumption, population growth rate, and investment to the dependent variable, namely economic growth of all cities / regencies in East Java and also the agrarian and industrial sectors of the city / district in East Java in 2010 period -2016 is to use dynamic panel data regression analysis or Generilized Momment Method.

The dynamic panel data model is one of the analytical methods that can be used to analyze the short and long-term impacts of an economic policy implemented by the government. One example is the government sets a policy to raise interest rates, it will be seen whether this policy affects the demand for loan credit. In the economic sector, a policy that is implemented by the government at this time often has only seen its impact in the next few periods. This is because economic activities have time lags from policy decision making to realization. Thus, dynamic models are really desirable for use in examining problems in the economic sector.The features of the dynamic dialog box data model are the time lag of the dependent variable, this is due to habit factors. That is why the panel data model is more suited to identify the real conditions in economic analysis.

In this study, the dynamic panel data regression equation used is based on panel data, which can be formulated as follows (Teixeira & Queirós, 2016):

$$y_{i.t} - y_{i.t-1} = \alpha \ y_{i.t-1} + \beta X_{i.t} + \mu_i + \varepsilon_{i,t}$$

In the equation $y_{i,t}$ is the logarithm equation of the per capita GRDP in the city i and time period t, while $X_{i,t}$ is the variables that affect per capita GRDP and μ_i is the region outside the observation. Whereas $\varepsilon_{i,t}$ is an error term. The above equation can be rewritten as follows:

$$y_{i,t} = \alpha_1 y_{i,t-1} + \beta X_{i,t} + \mu_i + \varepsilon_{i,t}$$

$$\alpha_1 = 1 + \alpha$$

In detail the econometric model used to estimate the research is as follows:

$$Y_{i,t} = \alpha_1 y_{i,t-1} + b_1 x_{1i,t} + b_2 x_{2i,t} + b_3 x_{3i,t} + b_4 x_{4i,t} + b_5 x_{5i,t} + b_6 x_{6i,t} + e$$

Where: Y: Economic Growth Rate; α: Constant; $\beta_{1,2,3,4}$: Estimator of regression coefficient/slope; x_1: Labor Productivity; x_2: Education; x_3: Capital Expenditure; x_4: Investment x_5: Household consumption; x_6: Population Growth Rate; e: *Error* or residual variables.

In the use of dynamic panel data methods (Generalized Method of Moments), several stages are needed in estimating data. The following are the steps taken.

1. Testing the stationary data to determine if the data is stationary at the level or first differences.

2. Conducting cointegration tests which are intended to determine whether the research variables are cointegrated in the long term.

3. Estimating dynamic panel data by doing statistical and t-statistic tests on Generalized Method of Moments estimation output.

To reduce the problem of endogeneity with explanatory variables, Arellano and Bond proposed the use of instrumental variables in GMM. The basic idea of this method is to eliminate the permanent effect on each individual research by doing the data on the first differentiator in the regression equation. Then other variables will be considered as suitable instrument variables from the endogenous variables in the equation. But this will lead to weak instrumental problems that lead to models that are not precise (Teixeira & Queirós, 2016).

However, the GMM estimator in the first difference has weaknesses, Bond and Blundell (1998) argue that in the case of persistent data, the lag rate tends to be a bad instrument variable in the first difference equation. Bond and Blundell (1998) suggest a GMM system estimator in which the system of equations is estimated in the first difference and at the level (Firdaus, 2010).

The GMM system is able to overcome the problem of unresolved heterogeneity and eliminate bias variables, endogeneity errors often arise when using pooled OLS equation models and fix effects. It can also overcome the potential for bias related to GMM first difference estimator (Teixeira & Queirós, 2016).

The dynamic panel data estimates can be divided into one estimation step and two estimation steps according to the weight matrix choice. Roodman explained that with an increase in the number of time periods, the GMM system will automatically produce instruments in large numbers that can replace endogenous variables that can weaken the model specifications. Therefore, for research with a longer period of time can be used one step GMM estimation, and for research with a shorter time period can use a two-step GMM estimation (Teixeira & Queirós, 2016).

RESULTS OF STUDY

The estimation process in this study will be divided into three parts. That is the estimation of the data of all cities in East Java, then the estimation in the city and regency of the industrial sector in East Java and the last estimation in the cities and regencies of the agricultural sector in East Java. This is performed to ascertain out how the influence of independent variables on economic growth in each area of the industrial sector, the

agricultural sector, or the region in the entire East Java province. Meanwhile the dynamic panel data estimation process is extended out in three stages, first is to test the data stationary, then test, co-migration and finally the goodness of fit test.

The Cities/Regencies throughout East Java. In the stationary test in this study will be examined along the first difference data, because afterwards the data estimation using dynamic panel data method will use instrumental variables at the first difference level. From the table above it can be seen that all variables tested at the first difference level all variables have shown stationary data. This is indicated by the results of the test which shows a number below the alpha value of 0.05.

The next is the cointegration test. From the estimation results using E-views software, the results for the data in the entire East Java Province trace statistic is 270.01 and critical value is 125.6154, then the trace statistic is greater than the critical value, which means that H0 is rejected and the data has a cointegration relationship. While for the co-integration test with Max-Eigen, the Max-Eigen Statistic value is 113.56 and the critical value is 46.23. Then the Max-Eigen Statistic is greater than the critical value, which means that H0 is rejected and the data has a cointegration relationship.

Then finally is the estimation of dynamic panel data with software E-views on data in all cities and regencies in East Java Province. From the estimation results, it is found that the number of observations of the research is 228, R-square is 0.8847, which means 88.47% of the model can explain the effect as a whole, while the rest is explained by the error variance. Of all research variables, only one variable is not significant in influencing the dependent variable. That is the consumption variable with a probability value of 0.213. The number is above the alpha value of 0.05.

Table 3 – Output Estimation for All Cities in East Java

Variable		Prob	Coefficient
Labor Productivity (LOG_LABOR)		0.00530*	3.50669
Average School Length (EDUC)		0.00970*	1.65892
Capital Expenditures (LOG_CAPEXPEND)		0.00580*	0.04529
investment (LOG_INV)		0.00050*	8.48405
Consumption (LOG_CONSUM)		0.2135	0.23341
Population Growth (POPULATION)		0.00000*	0.93228
Goodness of Fit	Total Observations	228	
	R-square	0.8847	
	Adjusted R-square	0.8816	
Stationery Test	Economy Growth (GROWTH)	0.0001*	
	Labor Productivity (LOG_LABOR)	0.0000*	
	Average School Length (EDUC)	0.0001*	
	Capital Expenditures (LOG_CAPEXPEND)	0.0000*	
	investment (LOG_INV)	0.0001*	
	Consumption (LOG_CONSUM)	0.0000*	
	Population Growth (POPULATION)	0.0000*	
Cointegration Test (Trace)	Trace Statistic	270.0146	
	Critical Value	125.6154	
Cointegration Test (Max-Eigen)	Max-Eigen Statistic	113.5678	
	Critical Value	46.23142	

*Notes: * Significant at alpha level 5%; ** Significant at alpha level 10%;*** Significant at alpha level 15%.*

This result is supported by several researchers who have conducted research on variables that affect economic growth. First is research from Teixeira & Queirós (2016) entitled "Economic Growth, Human Capital and Structural Change: A Dynamic Panel Data Analysis". From the results of the research, it was found that the interaction between human capital and structural changes in technology-intensive industries has a significant effect on economic growth. Nevertheless, significant influence depends on the duration of the period and the type of land. Whereas in developed countries with the period of 1960-2011 the impact of the interaction between human capital and positive structural changes. In contrast, in the Mediterranean country with the period 1990-2011 with a shorter period of human

capital is significantly positive with economic growth, but human capital with high technology specialization and knowledge-intensive orientation is a negative direction.

First is the labor variable. From the results of the study it was found that labor variables have a positive and significant effect on GDP per capita. Mankiw (2006)explained the influence of labor on economic growth. It is stated that unemployment is a trouble in heavy macroeconomics. The number of employment opportunities will affect productivity in the real sector. And then that the production cycle cannot run normally which results in reduced yield from the production sector. Paul Doglas in 1927 discovered the fact that in a longer period, the division of labor and national income was constant and constant. Which means that when an economy grows well, the amount of income received by workers will grow at almost the same level. This means that the availability of labor for production factors will always be maintained as long as economic growth is in good condition. Also, what happens with income from capital owners. In other words, this fact also supports the results of research that get results that investment has a positive and significant influence on economic growth. The higher investment will encourage manufacturers to add production factors. When production factors increase, the quantity of production will increase. This is what will advance the growth of production yield in several sectors.

Meanwhile, on the population growth variable, it was found that the variable had a substantial and positive influence on GDP per capita. This result is consistent with the population growth theory proposed by Solow. Mankiw (2006) explainedregarding population growth referred to by Solow. According to Solow, a state that holds a high population increase will cause a high rate of GDP per capita as well.This implies that the higher the population, the higher the contribution of the community in increasing the output of the economy.

Within a broad area or area, the composing of the economic social system will be increasingly complex. This is because in a wide geographical area such as the provincial and national levels, there are many cultural differences in the community. The wider the area, the greater the difference. This is what occurred in the structure of the economy in East Java Province. The diversity of cultures found in East Java Province makes the business fields occupied by the community will also vary. So that the distribution of business fields in the economy in East Java Province will become increasingly varied.

Cities/Regencies Industrial Sector of East Java. Stationary test data for research data in the City and District industrial sectors in East Java found that of all the variables tested at the first difference level, all the variables used in this subject have shown stationary data. This is shown by the results of the test which establishes a figure below the alpha value of 0.05.

Equally for the cointegration test of the city and district data in the industrial sector, it was found that the trace statistic value was 135.21 and a critical value was 125.64, so the trace statistic was more outstanding than the critical value, which means that H0 was rejected and the data contained cointegration relationships. Then for the co-integration test with Max-Eigen obtained the Max-Eigen Statistic number is 54.06 and the critical value is 46.23. Then the Max-Eigen Statistic is greater than the critical value, which means that H0 is rejected and the data has a cointegration relationship.

The next is the estimation of dynamic panel data in cities and regencies industrial sector in East Java province. The output result of the estimation using E-Views software obtainedthe probability value that all variables have been significant in the alpha level 0.1.

From the results of the study it was found that all the independent variables used in examining their effects on economic growth in the City and District industrial sectors in East Java had a significant influence. These results are consistent with the initial hypothesis of this study, namely the variables of labor, education, modal expenditure, investment, consumption, and population growth have a significant influence on economic growth in East Java. These results are also supported by several previous studies that have been done previously. First is research written by Sabir, Yustika, & Maskie (2015) entitled "*Local Government Expenditure, Economic Growth and Income Inequality in South Sulawesi*

Province" suggested the results revealed that government spending played an important role in terms of economic growth.

Then different research was done by Pelinescu (2015) entitled "*The Impact of Human Capital on Economic Growth*" that in European countries there is a positive relationship between GDP per capita and innovation capacity of human capital and qualifications of employees. Only the negative relationship occurs in education expenditure in GDP and GDP per capita is possible because of heterogeneous occurrences in each state.

Table 4 – Output Estimation for an overall Industrial sector of East Java City

Variable		Prob	Coefficient
Labor Productivity (LOG_LABOR)		0.00000*	4.96888
Average School Length (EDUC)		0.00000*	0.6618
Capital Expenditures (LOG_CAPEXPEND)		0.00000*	0.05851
investment (LOG_INV)		0.00010*	0.32427
Consumption (LOG_CONSUM)		0.00230*	5.0213
Population Growth (POPULATION)		0.00000*	0.58509
Goodness of Fit	Total Observations	60	
	R-square	0.9998	
	Adjusted R-square	0.9998	
Stationary Test	Economy Growth (GROWTH)	0.0008*	
	Labor Productivity (LOG_LABOR)	0.0012*	
	Average School Length (EDUC)	0.0000*	
	Capital Expenditures (LOG_CAPEXPEND)	0.0001*	
	investment (LOG_INV)	0.0000*	
	Consumption (LOG_CONSUM)	0.0000*	
	Population Growth (POPULATION)	0.0000*	
Cointegration Test (Trace)	Trace Statistic	135.2166	
	Critical Value	125.6154	
Cointegration Test (Max-Eigen)	Max-Eigen Statistic	54.0604	
	Critical Value	46.23142	

Notes: * Significant at alpha level 5%; ** Significant at alpha level 10%; *** Significant at alpha level 15%.

Meanwhile, the theoretically consumption expenditure according to Samuelson (2004) consumption theory is a component that has the largest contribution in GDP, covering more than 60 percent of total expenditure in the last 10 years. The primary elements of consumption expenditure among the most important categories are housed, motorized vehicles, food, and community services. Furthermore, the consumption function according to Samuelson (2004)is one of the main components of the overall economic system. The role of consumption expenditure shows the kinship between the quantity of consumption spending and disposable income. There are several main factors affecting consumption expenditure according to Samuelson (2004), that is;

1) Disposable income explains that consumption expenditure is closely related to disposable income, the only period in which income and consumption do not show the same pattern is during World War II where consumer goods are very scarce, and people are required to save income they are to assist the state in funding war funding.

2) Permanent income is the simplest consumption theory and only considers the current level of income. In estimates that are done carefully shows that a person does not only make his consumption expenditure on current income, but also on long-term trends.

Meanwhile, based on information published by the Indonesian Central Bureau of Statistics in 2017 roughly the number of medium and large societies in the industrial sector in East Java Province, the fact that the number of troupes in the industrial sector is increasing year by year. If seen from table 5.21 the number of medium and large industrial companies in 2011 was 6288 companies, increasing from year to year to 2016 to 6672 companies.

Cities/Regencies Agricultural Sector of East Java. Stationary test data for research data in the City and District of the agricultural sector in East Java showed that all variables were stationary. This is indicated by the probability value of each variable that has a value

below the alpha value of 0.05%. This indicates that the data is stationary at the first difference level.

Furthermore, for the cointegration test of the city and regency data in the agricultural sector, trace statistic is 199.28 and critical value is 125.6154, so the trace statistic is greater than the critical value, which means that H0 is rejected and the data has a cointegration relationship. While for the co-integration test with Max-Eigen, the Max-Eigen Statistic value is 81.32 and the critical value is 46.23. Then the Max-Eigen Statistic is greater than the critical value, which means that H0 is rejected and the data has cointegration relationships.

Finally is the estimation of dynamic panel data on data in the City and District agricultural sector in East Java Province. From the results of the estimation obtained from the probability value that there is one variable that is not important at the alpha level 0.05, namely the consumption variable with a probability value of 0.4008.

Table 5 – Output Estimation for an Agricultural sector of East Java City

Variable		Prob	Coefficient
Labor Productivity (LOG_LABOR)		0.00000*	3.00065
Average School Length (EDUC)		0.00210*	2.04499
Capital Expenditures (LOG_CAPEXPEND)		0.00060*	0.02833
investment (LOG_INV)		0.02160*	12.71788
Consumption (LOG_CONSUM)		0.4008	4.72029
Population Growth (POPULATION)		0.00010*	1.33394
Goodness of Fit	Total Observations	168	
	R-square	0.9971	
	Adjusted R-square	0.9964	
Stationary Test	Economy Growth (GROWTH)	0.0009*	
	Labor Productivity (LOG_LABOR)	0.0000*	
	Average School Length (EDUC)	0.0003*	
	Capital Expenditures (LOG_CAPEXPEND)	0.0000*	
	investment (LOG_INV)	0.0008*	
	Consumption (LOG_CONSUM)	0.0000*	
	Population Growth (POPULATION)	0.0000*	
Cointegration Test (Trace)	Trace Statistic	199.2888	
	Critical Value	125.6154	
Cointegration Test (Max-Eigen)	Max-Eigen Statistic	81.32222	
	Critical Value	46.23142	

Notes: * Significant at alpha level 5%; ** Significant at alpha level 10%; *** Significant at alpha level 15%.

In the results of the study regarding the influence of determinant variables on economic growth in the City and Regency of the agricultural sector in East Java Province shows results that are not much different from the City and Regency of the Industrial sector in East Java. In the City and District of the agricultural sector in East Java, it was found that 1 in 6 determinant variables did not cause a significant effect on per capita GDP. This variable is consumption. Meanwhile, other variables, namely labor, education, capital expenditure, population growth, and investment have a positive and significant influence.

This result is supported by research from Lacina & Minarik (2002) entitled "*Impact of agricultural sector on the economic situation of NUTS III regions in the Czech Republic*". In this research, it was found that labor is one of the most influential factors in growth in the country / region of the agricultural sector. But other results in the study differed from the results obtained in this study. That is, the population has a significant influence on GDP per capita. This is a separate phenomenon in the East Java region. It is hoped that further research can further explore this matter.

Then the next is the education variable which also has a significant influence on economic growth in the City / Regency of the agricultural sector in East Java. These results are in accordance with research conducted by Pudasaini (1983) entitled "The Effects of Education in Agriculture: Evidence from Nepal". According to the research, education is an important factor in improving the quality of labor. With the high quality of labor, it will increase

the quantity of labor productivity and increase production output. So that it will have an impact on the increase in economic growth in the region.

The insignificance of consumption variables in the agricultural sector in East Java Province can be reduced by several things. From the data published by the Indonesian Statistical Center in 2017, it was found that rice production during the study period often decreased. Existing data show the quantity of rice output and also the portion of rice production growth from 2010 to 2016. It is seen that rice production in the study period (2010-2016) in certain years decreased. In 2010 rice production in the province of East Java was 11.6 million tons, then in 2011 it fell 9.17% from 2010 to 10.5 million tons.

Then in other data published by BPS, East Java Province, it was found that East Java's consumption patterns tend to decrease for food consumption expenditure. This is shown in graph 5.13 which illustrates the pattern of consumption expenditure of East Java people. On the graph it can be seen that from 2010 to 2016 the percentage of consumption expenditure for foodstuffs declined from year to year. East Java people in that period tend to divert food expenditure to non-food expenditure. This allows the consumption variable to be insignificant in this study.
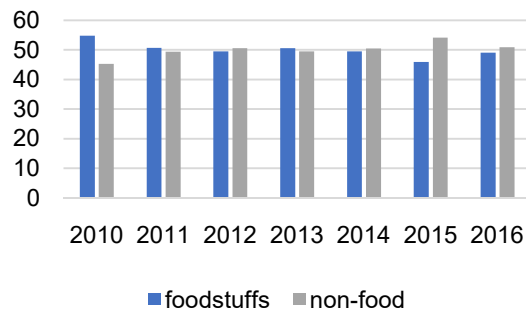

Figure 5 – Percentage of Public Consumption Expenditures in East Java Province in 2010-2016, %
(Source: Badan Pusat Statistik Provinsi Jawa Timur, 2017d)

Chetty & Szeidl (2007)explained that in the household have priority in carrying out their routine expenses. In their opinion, these priorities are influenced by several things, one of which is the risk of preference. They analyze the priorities in risk selection in the model that consumes two different needs, one is the need for payment in the transaction (residence), second is the need that can be adjusted at any time (food). In short, the study describes how to determine the consumption expenditure of households. Research from Chetty & Szeidl (2007)can also explain the results of this study which found that consumption expenditure has no influence on economic growth.

CONCLUSION

Based on the results and discussion of the results of the research in the previous section, the following are the conclusions obtained:

First, for the results of an analysis of variables in all cities and regencies in East Java, the labor variable has a positive and significant effect; education variables have a positive and significant effect; capital expenditure variables have a positive and significant effect; investment variables have a positive and significant effect; and the variable of the population has a positive and significant effect.

Second, the analysis of consumption variables shows insignificant results. The insignificance of the influence of consumption variables on economic growth in cities and regencies in East Java Province is presumably because in the period of this study (2010-2016), there was a decline in the level of consumption of the people of East Java. The possibility of consumption expenditure in that point is shifted to other expenses. But this requires further research to see the real facts.

Third, the comparison between the agricultural sector and the industrial sector in East Java shows that there are differences in the significance of the determinant variables that influence economic growth between the City / Regency industrial sector and the City / Regency agricultural sector in East Java Province. Some determinant variables in the City / Regency of the agricultural sector obtained insignificant results in influencing economic growth. Whereas for the City / Regency the overall industrial sector shows significant results in influencing economic growth variables.

Finally, when viewed from the estimated coefficient, some of the variable coefficients in the industrial sector are greater than the variable coefficients in the agricultural sector, these variables are labor, capital expenditure and consumption variables. This implies that this variable has more influence on economic growth than other variables in the industrial sector rather than the agrarian sector. While other variables, namely education, investment and population growth, the agricultural sector has a variable with a higher coefficient compared to the industrial sector.

SUGGESTIONS

First, insignificant consumption expenditure on economic growth in an agricultural sector in a City/District shows an indication of the lack of purchasing power. The government is expected to be able to equalize the level of the community's purchasing power, which will be able to reduce inequality in economic development and poverty in the agricultural and industrial sector. This income equalization can be done in various ways, one of them is encouraging an increase in production of agricultural communities by intensifying, making efficiency, or rehabilitating agricultural land without having to add the existing agricultural land. Therefore, the productivity and income of the agricultural community can increase.

Secondly, other variables get a significant and positive results meaning that these variables have a positive contribution to economic growth in the East Java community. Therefore, in an effort to increase the economic growth in East Java, these variables can be the role model for those who have an interest in economic development in East Java. One example is labor productivity in East Java which can directly increase economic growth. This matter can be the government's focus to improve the quality of labor productivity by conducting various training to increase labor productivity.

REFERENCES

1. Attari, M. I. J., & Javed, A. Y. (2013). Inflation, Economic Growth and Government Expenditure of Pakistan: 1980-2010. Procedia Economics and Finance, 5(13), 58–67. https://doi.org/10.1016/S2212-5671(13)00010-5
2. Badan Pusat Statistik Provinsi Jawa Timur. (2017a). Data Belanja Modal. Retrieved from https://jatim.bps.go.id/dynamictable/2017/07/31/43/distribusi-pdrb-provinsi-jawa-timur-atas-dasar-harga-berlaku-menurut-pengeluaran-2010-2016.html
3. Badan Pusat Statistik Provinsi Jawa Timur. (2017b). Data Investasi. Retrieved from https://jatim.bps.go.id/dynamictable/2017/07/31/43/distribusi-pdrb-provinsi-jawa-timur-atas-dasar-harga-berlaku-menurut-pengeluaran-2010-2016.html
4. Badan Pusat Statistik Provinsi Jawa Timur. (2017c). Data Konsumsi. Retrieved from https://jatim.bps.go.id/dynamictable/2017/07/31/43/distribusi-pdrb-provinsi-jawa-timur-atas-dasar-harga-berlaku-menurut-pengeluaran-2010-2016.html
5. Badan Pusat Statistik Provinsi Jawa Timur. (2017d). Data Pertumbuhan Ekonomi. Retrieved from https://jatim.bps.go.id/dynamictable/2018/01/16/207/distribusi-pdrb-atas-dasar-harga-berlaku-terhadap-pdrb-38-kabupaten-kota-di-jawa-timur-2010-2016.html
6. Badan Pusat Statistik Provinsi Jawa Timur. (2017e). Data Rata-Rata Lama Sekolah. Retrieved from https://jatim.bps.go.id/dynamictable/2017/09/22/103/rata-rata-lama-sekolah-penduduk-jawa-timur-menurut-kabupaten-kota-ipm-metode-baru-2010-2016.html
7. Badan Pusat Statistik Provinsi Jawa Timur. (2017f). Data Tenaga Kerja. Retrieved from https://jatim.bps.go.id/statictable/2017/06/09/463/jumlah-angkatan-kerja-menurut-

kabupaten-kota-2011-2015.html

8. Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. Journal of Econometrics, 87(1), 115–143. https://doi.org/10.1016/S0304-4076(98)00009-8

9. Butkiewicz, J. L., & Yanikkaya, H. (2011). Institutions and the impact of government spending on growth. Journal of Applied Economics, 14(2), 319–341. https://doi.org/10.1016/S1514-0326(11)60017-2

10. Chetty, R., & Szeidl, A. (2007). Consumption Commitments and Risk. Quarterly Journal of Economics, 5(5), 831–877.

11. Firdaus, M. (2010). Disparity of Investment Imfloes Among Regions in Indonesia. Economic Journal of Emerging Market, 2(3), 237–250.

12. Lacina, L., & Minarik, B. (2002). Impact of agricultural sector on the economic situation of NUTS III regions in the Czech Republic. Agriculture Economics, 2002(431100007), 444–448.

13. Mankiw, G. N. (2006). Makroekonomi. Jakarta: Erlangga.

14. Pelinescu, E. (2015). The Impact of Human Capital on Economic Growth. Procedia Economics and Finance, 22(November 2014), 184–190. https://doi.org/10.1016/S2212-5671(15)00258-0

15. Pudasaini, S. P. (1983). The Effects of Education in Agriculture: Evidence from Nepal. American Journal of Agricultural Economics, 65(3), 519–515. https://doi.org/10.2307/1240499

16. Rehman, N. U. (2016). FDI and economic growth: empirical evidence from Pakistan. Journal of Economic and Administrative Sciences, 32(1), 63–76. https://doi.org/10.1108/JEAS-12-2014-0035

17. Sabir, Yustika, A. E., & Maskie, G. (2015). Local Government Expenditure, Economic Growth and Income Inequality in South Sulawesi Province. Journal of Applied Economic and Business, 3(2), 61–73.

18. Samuelson. (2004). Ilmu Makroekonomi. Jakarta: Salemba.

19. Teixeira, A. A. C., & Queirós, A. S. S. (2016). Economic growth, human capital and structural change: A dynamic panel data analysis. Research Policy, 45(8), 1636–1648. https://doi.org/10.1016/j.respol.2016.04.006

20. Triyanto, D., Wahyudi, S. T., & Ananda, C. F. (2017). The Effect of Capital Expenditure on Local Own-Source Revenue: Study In East Java Indonesia. Jurnal Ekonomi Kuantitatif Terapan, 10(2), 137–144.