How Detect Relationship Between Tourism, Local Income, And Human Capital In Madura?

Alifah Rokhmah Idialis

Ilmu Ekonomi, Fakultas Ekonomi dan Bisnis, Universitas Trunojoyo Madura, Jalan Raya Telang PO BOX 2 Kamal Bangkalan Madura, Indonesia.

Abstract

This research trying to discovered causality between Local government revenue, human development index as driven factor for tourism in Madura. In this research using secondary data with period observation from 2005 until 2016. With using descriptive statistic, Johansen cointegration test, and granger causality as statistical analysis this research was estimated and got some result. Descriptive statistics result found the average of local government revenue, amount of tourist arrivals, and human development index (IPM) in Madura still smallest compared with average of East Java Province. Johansen cointegration test shows all of variables cointegrated in r =2. It means there is two long term relationship between variables in this research. The last result from Granger causality demonstrated there was direct causality from human development index and local government revenue to the tourist arrivals. Another causality test expressed direct causality from local government revenue to human development index

Keywords: *Tourism, human development index, local government revenue; Johansen Cointegration, Granger Causality*

Article Info

1. Introduction

The latest decade tourism has potential sector and increased all around the world especially in Indonesia. The Statistics Indonesia was reported that number of foreign tourist than came to Indonesia in 2016 about 11.5 million person increase about 18.6% compared with 2015 only at 9.7 million person. For domestic tourist all around Indonesia reported by Statistics Indonesia in 2016 about 264 million person has increase at 3.1% than in 2015 about 256 million person. Based on data from Statistics Indonesia report amount of foreign tourist that came to East Java Province in 2016 has total 220,570 person arise10% than in 2015 at 200,657 person. Meanwhile, domestic tourist reported 58.07 million person arise 12.82% compared with 2015 at 51.47 million person.

Main focus in this research wants to show how human development index and local government revenue could driven tourism. In this research also wants detect to that the tourism has potential factor in Madura. So in the future this sector will create and drive economy for Madura and became one of sector made welfare society. Based on central bureau of statistics report from four districs in Madura such as Bangkalan has number of tourist arrival in 2016 about 1,600,715 person fall 8% than 2015 at 1,736,111 person. Sampang having the number of tourist arrival at 57,794 person in 2016, but in 2015 at 57,786 person arise 0.01%. Meanwhile, Pamekasan has a total of number of tourist in 2016 at 223,334 person or rise 16% compared with 2015 only 193,019 person. The last report from Sumenep has a total of number of tourist in 2016 at 855,946 person, but in 2015 at 438,848 person or rise about 95%.

With using human development index (IPM), number of tourist (JKW), and local government revenue (PAD) as an observation variables for detect and certain as important role to the tourism in Madura, so shown a development chart the served in Picture 1, Picture 2, Picture 3, and Picture 4 for all districts in Madura. Based on that entire picture can conclude human development index overall Madura districts have significant influence to the number of tourism. This evidence had shown during period observation when human development index rise number of tourist also increases. Not only human development index that has positive and significant influence to the tourism, but also local government revenue has positive and significant impact to the tourism in Madura. According to all of picture below could detected and known local government revenue rise followed with increasing of number of tourist.

Picture 1. Development Chart Number of Tourist, Human Development Index, and Local Government Revenue in Bangkalan 2005-2016
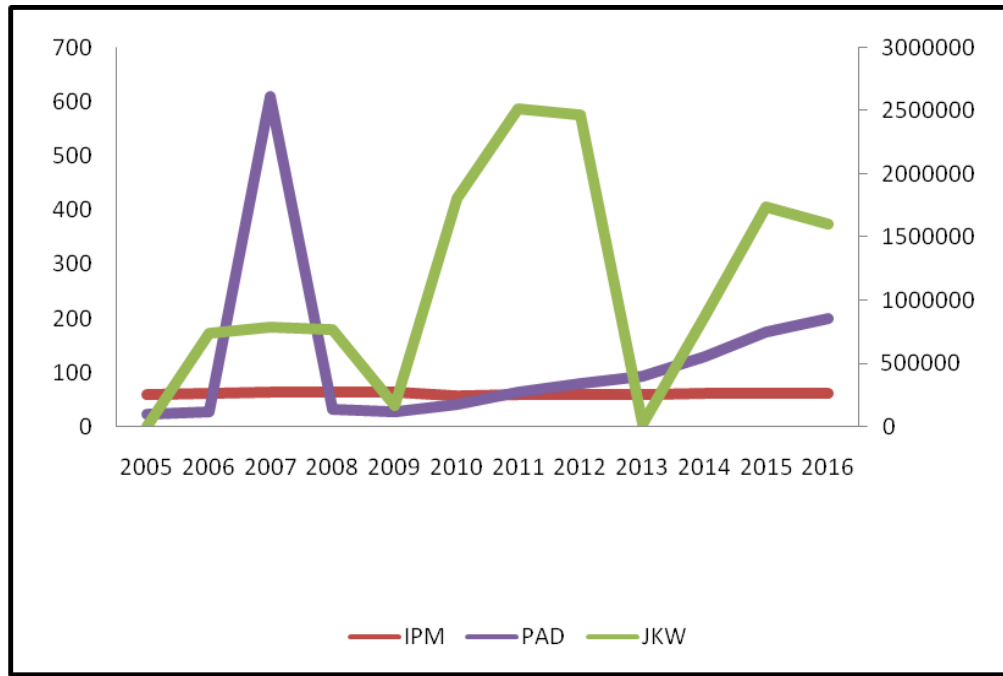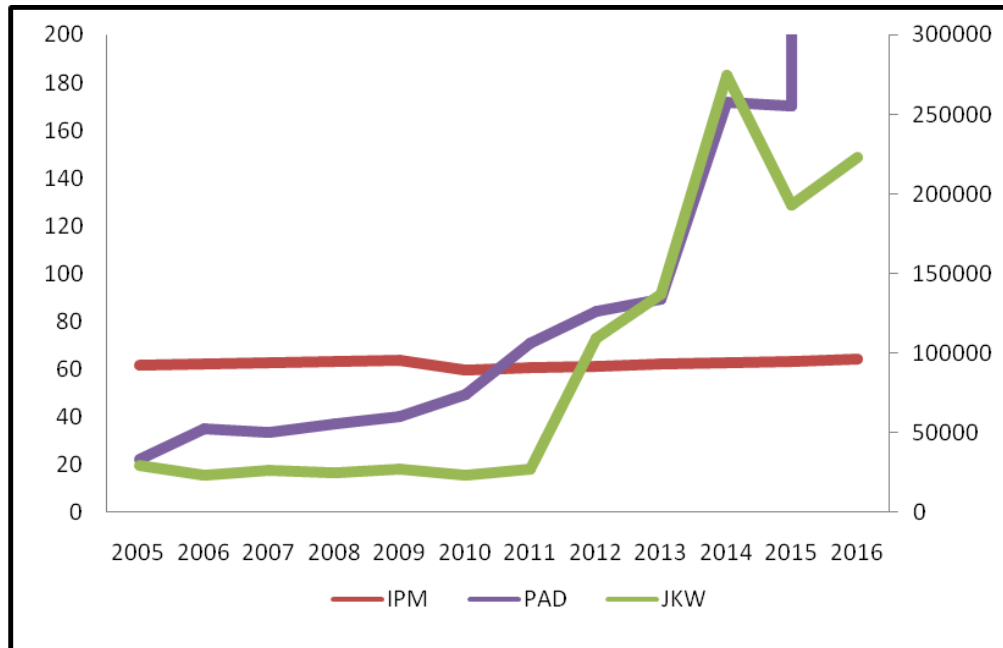

Source: Statistics Bangkalan , Department of tourism culture youth and sports Bangkalan, data processed

Picture 2. Development Chart Number of Tourist, Human Development Index, and Local Government Revenue in Sampang 2005-2016
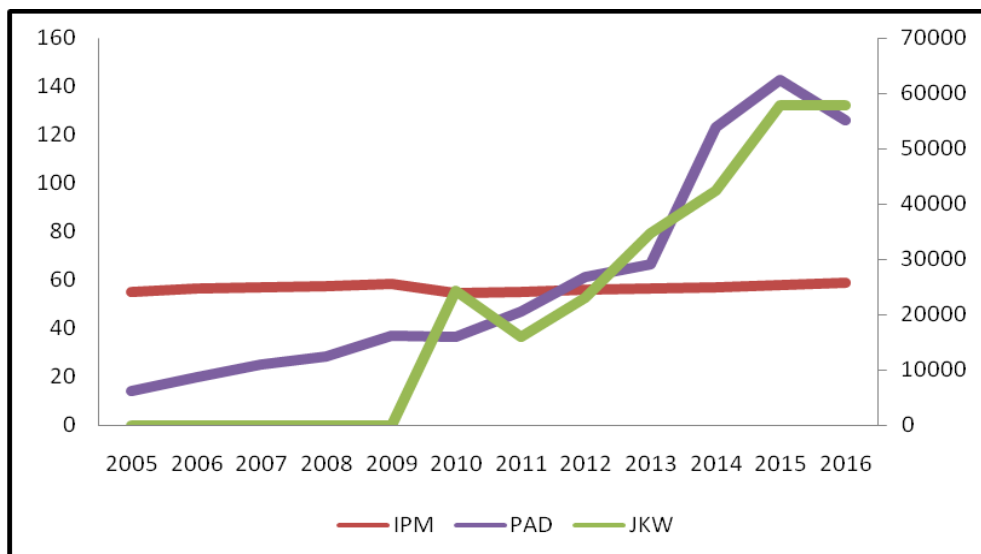
Source: Statistics Sampang, Department of tourism culture youth and sports Sampang, data processed

Picture 1. Development Chart Number of Tourist, Human Development Index, and Local Government Revenue in Pamekasan 2005-2016

Source: Statistics Pamekasan , Department of tourism culture youth and sports Pamekasan, data processed

Picture 4. Development Chart Number of Tourist, Human Development Index, and Local Government Revenue in Sumenep
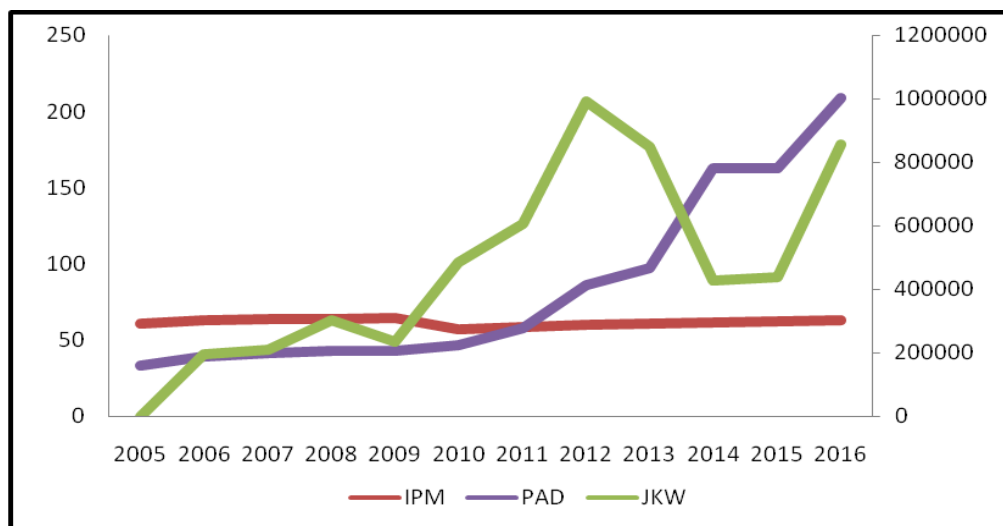2005-2016

Source: Statistics Sumenep , Department of tourism culture youth and sports Sumenep, data processed

From the mapping chart of the result above and supported by previous research says that there are behavior affect between human development, number of tourism, and local government index in Madura. According to Esmaeli and Esmaeli (2013) tourism has social and cultural impact to gave contribution to the economic growth. Saner et al.(2015) said tourism strategy in developing countries could made opportunity tax as income.

Refers to the chart above show there are positive and significant relationship between human development and a number of tourist arrivals in short term and long term (Mehregan et al., 2012). Folarin and Ajogbeje (2017) discovering tourism development have positive and significant effect to the human capital in Africa. Biagi et al. (2015) between tourism and human development have interact and the results through improved better economy.

Another research present by Morissette (2011) tourism demand can push production and Sales of goods and services. This is means create job opportunities and make receipt to government through the tax and non taxes. Borici et al. (2012) describe tourism is a new industry who have trouble quite large ourism is highly sensitive to the price and tax rates, so it needs role from the government and need the quality of human resources to address the problem of high tourism. Besides that, said the government expenditures source from state revenuesfor healthy, education, and infrastructure simoultaneously have positive and significant to increasing human development. Cahyaningrum (2017) that the bajo empowerment for the purposes of tourism produced a the possibility that the tourism in bajo Wakatobi increase and bring regional income and improve quality of human resources in bajo without leaving local culture.

Different with previous research that only seen in one side causality from human development and tourism or local government revenue and tourism. In this research want to learn jointly causality for all of them. To detect and analyze the causality between human development, tourism, and local government expenditure these causality will estimated and tested by using Granger causality.

2. Methodology

This research using panel data. The panel data is comes from secondary data as number of tourist, local government revenue, and human development index of four districts in Madura such as Pamekasan, Sampang, Bangkalan, and Sumenep with observation period start from 2005 until 2016. That secondary data taken from among others: Dkatadata.co.id, Statistics Indonesia, and Department of tourism culture youth and sports. Based on this data would tested and estimated with descriptive statistic, Johansen cointegration test, and Granger causality test. Johansen cointegration test used for testing exist or not long term relationship between variables in this research (Enders, 1995 and Patterson, 2000).

Meanwhile, Granger causality test will used for know is there any causality between variables?. Equation for Granger Causality test in this research refers to null hypothesis is no causality between variables, and alternative hypothesis there is causality between variables. Equation for causality in this research refers to:

$$JWK_{it} = \alpha_0 + \alpha_1 JWK_{it-n} + \alpha_2 IPM_{it-n} + \alpha_3 PAD_{it-n} + \varepsilon_{1it} \qquad (1)$$

$$IPM_{it} = \alpha_0 + \alpha_1 IPM_{it-n} + \alpha_2 JKW_{it-n} + \alpha_3 PAD_{it-n} + \varepsilon_{2it} \qquad (2)$$

$$PAD_{it} = \alpha_0 + \alpha_1 PAD_{it-n} + \alpha_2 IPM_{it-n} + \alpha_3 JKW_{it-n} + \varepsilon_{3it} \qquad (3)$$

Where:

IPM = human development index

JKW = number of tourist

PAD = local government revenue

$\varepsilon_{1it}, \varepsilon_{2it}, \varepsilon_{3it}$ = error term each equation

Using three equations above would estimated to known causality by using Granger causality test. If F-statistic value less than F-table or probability value of F-statistic more than significant level at 5% and 10%, so not reject Null hypothesis and reject alternative hypothesis. That is means no causality between variables. But if F-statistic value more than F-table or probability value of F-statistic less than significant level at 5% and 10%, so reject Null hypothesis and not reject alternative hypothesis. That can conclude causality between variables observation were occurs.

3. Result Estimation

This part showing the test panel data of number of tourists (JKW), local government revenue (PAD), and human development index (IPM) from four districts in Madura such as Pamekasan, Sampang, Bangkalan, and Sumenep. Third variable in this research will estimated by using several test: descriptive statistics, cointegration test for panel data, and Granger causality test panel data. All of estimation in this research will processed and calculated by using EVIEWS 6.

Descriptive Statistic

Result estimation for descriptive statistic presented in Table 1. From that table suggesting that average or mean from local government revenue in Madura amount 369 billion rupiahs. This is proves local government revenue in Madura still smallest than average local government at East Java Province. For human development index in Madura has mean at 60.5 per year. The result have means human quality in Madura still smallest compared with average human development index in East Java Province. The last result showing mean of number of tourist at 426,536 person per year. This evidence proves the lack of interest especially from number of tourist visitors for coming to Madura.

Another result from table below from normality test describe only human development index (IPM) normally distributed because probability of Jarque-Berra statistic was at 0.178 more than 5% significant level. And two other variable not normally distributed can seen by probability of Jarque-Berra statistic were at 0.000 and 0.000 less than 5% significant level.

Table 1. Descriptive Statistic

	IPM	JKW	PAD
Mean	60.46729	426,536.5	369,3173
Median	61.20500	150,954.6	53.60000
Maximum	64.82000	251,6691.	13670.00
Minimum	54.49000	0.000000	14.30000
Std, Dev,	2.833721	635356.4	1962.870
Skewness	-0.470933	1.937977	6.686313
Kurtosis	2.084693	6.124540	45.81218
Jarque-Bera	3.449797	49.57153*	4023.420*
Probability	0.178191	0.000000	0.000000
Sum	2902.430	20473753	17727.23
Sum Sq, Dev,	377.4087	1.90E+13	1.81E+08
Observations	48	48	48

*Source: data processed; *significant at level 5%*

Cointegration Test

The next estimation is cointegration test with Johansen test. Result show for this test discovered in Table 2 and Table 3. In table 2 show the VAR model to determined optimum lag and from this process got lag optimum 4. After got lag optimum next steps is cointegration test that appeared in Table 3. In that table shows H0: $r = 0$; $r \leq 1$; and $r \leq 2$ were rejected. However, Ha: $r = 1$; $r > 1$; and $r = 2$ not rejected. All this result have conclusion there are two long term relationship between variable human development index, local government revenue, and number of tourist. The result is strengthened by Trace and Max Eigen statistic value each rank more than 0.05 Critical Value Trace 0,05 and Critical Value Max-Eigen. When an alternative hypothesis $r = 1$ Trace and Max Eigen statistic value each one is 114.1218 and 80.28281 more than Critical Value Trace 0,05 and Critical Value Max-Eigen which are 35.01090 and 24.25202. For alternative hypothesis $r > 1$ Trace and Max Eigen statistic value each one is 33.83900 and 28.13898 more than 18.39771 Critical Value Trace and 17.14769 Critical Value Max-Eigen. The last result for contegration test $r = 2$ point out Trace and Max Eigen statistic value each having value 5.700020 and 5.700020. Both of that value more than Critical Value Trace 3.841466 and Critical Value Max-Eigen 3.841466.

Table 2. Optimum Lag VAR Model

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-847.1098	NA	2.38e+19	53.13186	53.26928	53.17741
1	-822.8980	42.37068	9.25e+18	52.18112	52.73078*	52.36332

2	-819.2322	5.727766	1.31e+19	52.51451	53.47640	52.83335
3	-803.6090	21.48198	9.07e+18	52.10056	53.47469	52.55604
4	-786.4767	20.34456*	5.94e+18*	51.59229*	53.37866	52.18442*

Source: data processed; *optimum lag = 4

Table 3. Result Estimation Johansen Cointegration Test

Variable	H0	Ha	Trace Statistic	0,05 Critical Value Trace	Max-Eigen Statistic	0,05 Critical Value Max-Eigen
	r = 0	r = 1	114.1218*	35.01090	80.28281*	24.25202
			0.0000		0.0000	
	r ≤ 1	r > 1	33.83900*	18.39771	28.13898*	17.14769
JKW			0.0002		0.0009	
PAD	r ≤ 2	r = 2	5.700020*	3.841466	5.700020*	3.841466
IPM			0.0170		0.0170	

Source: data processed; *significant at level 5%

Granger Causality

Using Granger causality test for measure this research, so got result that demonstrated in Table 4. Based on that table got some discovery, first human development index has direct causality to the number of tourist. These outcomes have been further strengthened by F-statistic probability 0.0996 less than level of significant 10%. Second, local government revenue has direct causality to the human development index shown by F-statistic probability 0.0058 less than level of significant 5%. The last result show local government revenue has direct causality to the number of tourist. This is proven by F-statistic probability 0.0006 less than level of significant 5%. Overall this result can conclude there has been a causality between variables.

Table 4. Result Estimation of Granger Causality for Panel Data

Null Hypothesis:	Obs	F-Statistic	Prob.
JKW does not Granger Cause IPM	32	0.28827	0.8826
IPM does not Granger Cause JKW		2.20974**	0.0996
PAD does not Granger Cause IPM	32	4.80331*	0.0058
IPM does not Granger Cause PAD		0.17034	0.9513

PAD does not Granger Cause JKW	32	7.33555*	0.0006
JKW does not Granger Cause PAD		0.56923	0.6875

*Source: data processed; *significant at level 5%, **significant at level 10%*

4. Conclusion

Based on result estimation above could be described as follows: descriptive statistic analysis shows mean of local government revenue of all districts in Madura about 369 billion rupiahs. This amount is lower than average of East Java Province. From different result describe mean of number of tourist arrivals about 426,536 person per year and mean of human development index about 60.4 per year. Both of this variable is still smallest than average of East Java Province. Cointegration test with using optimum lag 4 found there was two vector cointegration r =2. It means exist two long term relationship between human development index, number of tourist, and local government revenue.

Based on cointegration test result be made references for causality test. The last estimation found from Granger causality test as follows: there was direct causality from human development index and local government revenue to the number of tourist in Madura. This result determined by each probability F-statistic value at 0.0996 and 0.0006 less than 10% and 5% significant level. Another Granger causality result was also found direct causality from local government revenue to the human development index. The outcome determined by probability F-statistic value at 0.0058 less than 5% significant level. Generally, from that outcome can concluded all of district in Madura as Pamekasan, Sampang, Bangkalan, and Sumenep have potential and positive impact from local government revenue and human development index to driven and arise tourism sector. Meanwhile, this research found direct causality from local government revenue to human development index. This is means important and potential role from local government revenue to create and maintain human resource become skilled and qualified. Nevertheless, well human development index, local government revenue, and tourism sector needs improvement of management and supervision in order to become to be better and towards good governance for helping local citizens welfare.

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