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Analysis Of Dependence Ratio and Open Unemployment Rate Human Development Index In South Sumatra Province

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ABSTRACT

This study examined the effect of dependency ratio and unemployment rate on the human development index in South Sumatra Province. This study used secondary data with the type of time series data during 2002-2020 obtained from the Central Bureau of Statistics. The data analysis method used was Vector Auto Regression (VAR). The results showed that the HDI did not have a negative and significant effect on themselves, ABK had no negative and significant effect on the HDI, and TPT had no negative and significant effect on the HDI.

Keywords:
Depedency Ratio, Unemplayment Rate, Human Developments Indexs

INTRODUCTION

The Human Development Index (HDI) was introduced by Amartya Send and Mahbub Ul Haq through the UNDP (United Nation Development Program) in 1990 and is published periodically in the annual human development report. HDI is used to measure the extent of success in the quality of human life and whether this development can be reached by all groups in terms of income, health and education (BPS, 2009).

The HDI during this period, namely 2002 to 2020, saw a quite sharp increase. This is because the increase in HDI in Aceh province that has occurred since 2005 after the tsunami has resulted in a lot of assistance for the people of Aceh province both in the education and health sectors, which to this day we still feel for these two sectors, such as free school fees and even lots of scholarships. which is disbursed in Aceh and the health sector which is still free with the issuance of such as Aceh Health Insurance (JKA), National Health Insurance (JKN), Health Insurance (ASKES) and the Health Insurance Administering Agency (BPJS) for all Acehnese people, which is able to increase the HDI the. This very convincing increase in HDI continues to occur from year to year, although in 2013 the HDI value decreased due to perceived education by the entire population is not evenly distributed, but in reality not all residents can receive formal education, especially in the poor population group, if the distribution is according to expenditure groups, there are still disparities in the achievement of School Enrollment Rates (APS) between expenditure groups, then for health rates there is a high morbidity rate, namely the population who experience health complaints and cause disruption to their daily activities, this low level is due to four factors seen from environmental factors, health behavior, health services and heredity, and from an economic perspective, there is still high population inequality. This decline occurred in 2013,

amounting to 73.05% to 68.81% in 2014. However, subsequently, the HDI value continued to improve by experiencing quite a good increase.

The quality of human resources must be maximized, including through education, health services and the provision of employment opportunities (BKKBN, 2013). This is because the productive population has to bear the greater burden of the less productive population. The productive population referred to here are those aged 15 to 64 years, and the less productive population here is those aged less than 15 years old and over 65 years old. Conditions and situations like this can certainly hinder the development of quality human development in the region.

The population dependency ratio of Aceh province decreased significantly from 2002 to 2020, although there was an increase in 2010 of 56.32%. This condition continues to experience a fairly convincing decline from 2011 to 2023. This decline occurs because the average dependency ratio value above the population dependency ratio value of Aceh Province is still relatively high, this shows that the burden on the population of productive age in the region is still high, so that the low population of productive age will result in a large burden that must be endured by the population of productive age. Which means that people who work are lower than people who don't work.

This caused problems with the dependency ratio figure in 2006, where the dependency ratio figure decreased from the previous year, but the HDI also decreased from the previous year to 69.41%, the same thing also happened in 2014, where the dependency ratio was 54.88%. The HDI also decreased by 68.81%. The same thing also happened in 2019. This causes problems that are not comparable to the theory stated that when the dependency ratio increases, the HDI will decrease (Bhakti and Istiqomah, 2014).

This research can refer to research conducted by Pramono and Etty (2016) with Determinants of the Quality of Human Development in Districts/Cities of Central Java Province that the population dependency ratio has a negative and significant effect on HDI. This shows that if the population dependency ratio decreases by 1%, the HDI value will increase by 0.02. According to Sukirno (2002) HDI is also synonymous with unemployment, where when the HDI number decreases which is calculated from the value of education level, unemployment will also experience the same thing, because unemployment is a situation where someone who is in the workforce wants to get a job but still has not got it. the job. The main factor that causes unemployment is the limited knowledge that can be applied in the world of work.

The open unemployment rate experienced a real decline from 2002 to 2023. This is due to the high rate of poverty, this poverty occurs due to Looking for work nowadays is not more about knowledge or level of education but rather access to important people who tend to be prioritized. Meanwhile, the increase occurred in 2012 by 9.1% to 10.3% in 2013, this resulted in unstable HDI.

The development of the Human Development Index (IPMI), dependency ratio and open unemployment rate in South Sumatra Province from 2002 to 2023 has changed from year to year. Then for the TPT value, in 2009 the TPT figure decreased from the previous year by 8.71% while the HDI also decreased to 71.37%, then in 2012 the TPT increased by 9.1% while the HDI also increased from the previous year to 72.51. This is inversely proportional to the theory which states that when TPT decreases HDI will increase and vice versa (Chalid et

al, 2014).

This research can be based on research by Bhakti and Istiqomah (2014) with the research title Analysis of Factors Affecting the Human Development Index in Indonesia for the 2008-2022 period that the dependency ratio has a negative effect on HDI, the productive age group compared to the non-productive age group can provide benefits for national development, especially in the economic sector. However, to take advantage of these conditions, the quality of human resources must be maximized, including through education, health services and the provision of employment opportunities. The difference between this research and previous research is that in the independent variables the researcher used the dependency ratio and open unemployment rate variables, while previous research used the Regional Expenditure Budget (ABD) variable, the similarity in this research and previous research is that they both use the Human Development Index (IPM) variable). The difference between this research and previous research is that in the independent variables the researcher used the dependency ratio and open unemployment rate variables, while previous research used the variables unemployment, economic growth and government spending, the similarity in this research and previous research is that they both use the Human Development Index variable (IPM).

Human Development Index

The Human Development Index (HDI) is defined as a composite index used to measure human development achievements based on a number of basic components of human quality of life. The three basic components used as measures of quality of life are measured using an index for each component, namely the life expectancy index, education index and decent living standard index (Putra, 2015).

The Human Development Index (HDI) measures the achievement of human development based on a number of basic components of quality of life. The Human Development Index (HDI) is based on data that describes four components, namely long and healthy life which represents the health sector, literacy rate, school participation, and average length of schooling measuring development performance in the education sector and people's purchasing power for basic needs. seen from the average amount of per capita expenditure as an income approach

Dependency Ratio

The productive population must bear the greater burden of the less productive population. The productive population referred to here are those aged 15 to 64 years, and the less productive population here is those aged less than 15 years old and over 65 years old. Conditions and situations like this can certainly hinder the development of quality human development in the region.

The Life-Cycle Model for consumption and savings habits, proposed by Modigliani and Brumberg (1954), and Ando and Modigliani (1963) in Richard (2004) assumes that people's age influences their consumption behavior patterns. Dissavings can be covered by previous year savings. A person who is born already has life needs that demand to be met, even though it is clear that at that age he is not yet able to participate in the formation of the national product. This means that income is zero and the amount of consumption expenditure is positive, forcing the person to dissaving. Only after he grows up and enters the workforce can he earn an income and at age B this happens dissaving again. Then the income increases

so that savings occur up to the age of P. If the life is still long, then dissaving occurs again, and at this time the person becomes a living burden for other people. The population dependent burden ratio is the ratio between the non-productive age population (ages 0-14 and 65+) and the productive age population (ages 15-64). The lower the dependent burden ratio value, the better the dependent burden of the population (Mantra, 2000).

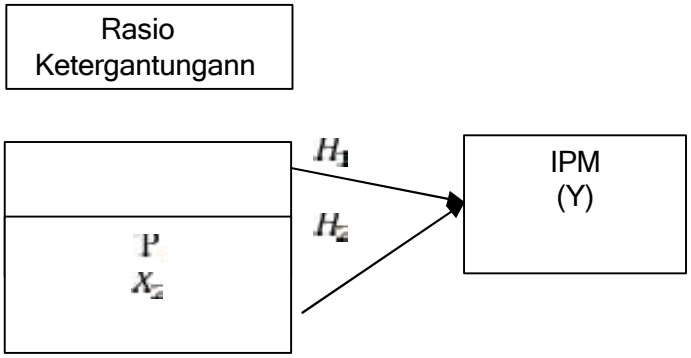
Unemployment

Unemployment is defined as someone who is classified into the workforce and is actively looking for work at a certain wage level, but cannot get the desired job (Sukirno, 2004). Unemployment will have the effect of reducing people's income, and that will reduce the level of prosperity that has been achieved. As the level of prosperity falls, another problem, namely poverty, will emerge (Sukirno, 2000).

Conceptual framework

To test this, the author used the Vector Auto Regression (VAR) analysis method. The researcher describes the framework of thought in a chart as follows:

Kerangka Konseptual



Hypothesis

H_1 : It is suspected that the dependency ratio has an influence on the Human Development Index in South Sumatra Province.

H_2 : It is suspected that the level of open unemployment has an influence on the Human Development Index in South Sumatra Province.

METHODS

Research Objects and Locations

The objects are the dependency ratio and open unemployment rate as well as the human development index. This research was conducted in the province of South Sumatra

Data Types and Sources

This research uses secondary data with time series data taken from the period 2002 to 2023. This data was obtained from the Central Bureau of Statistics Book (2019).

Operational Definition of Variables

1. Dependency Ratio ( ): comparison between non-productive age population (ages 0-14 and 65+) with the population of productive age (aged 15-64) (in percent).
2. Open Unemployment Rate (): a number that shows the number of unemployed people in 100 people in the labor force category (in percent). Human Development Index (Y): development achievements based on a number of basic components of quality of life (in percent).

Data analysis method

This research uses a research model, namely the Vector Auto Regression (VAR) model. The Vector Auto Regression (VAR) model is one of the timeseries methods used.

Stationarity Test

The stationarity test/unit root test (Unit Root Test) is carried out to determine whether or not a variable is stationary.

Optimal Lag

In dynamic research, determining the optimum lag is used to see how far the reaction of a variable influences other variables. (Widarjono, 2013).

Cointegration Test

Cointegration testing can be done with the Engle-Granger Test, CRDW Test, or Johansen Cointegration Test.

Granger Causality Test

The causality test is carried out to find out whether there is a relationship between endogenous (dependent) variables so that they can be treated as exogenous (independent) variables.

VectorAutoRegression Estimation

In VAR estimation, in order to calculate the variable Y that affects X and vice versa, it can be known compare the t table with the f table. If the t-statistic value is > than the t-table value, then variable Y influences X. The VAR equation in this research is as follows:

$$Y_t = \beta + 1 \sum_{i=1} \beta_1 X^{\mu_{t-i}} + \sum_{i=1} \beta_2 X^{2\ \mu_{t-i}} \varepsilon_{t1}$$

Information:

Y	: IPM
X1	: Dependency Ratio
X2	: TPT
εt1	: Disturbance Factor
β	: Constant
β1-β2	: Estimated Coefficient

Impulse Response Analysis

The IRF results are very sensitive to the ordering of the variables used in the calculation.

Variance Decomposition Analysis

This test is carried out to provide information about the dynamic relationship between the variables being analyzed.

RESEARCH RESULTS AND DISCUSSION

Vactor Autogeression (VAR)

Stationarity Test

Table Test Unit Root Test with Augmented Dickey Fuller (ADF)

Variabel	Unit Root	ADF test Satistic	Critical Value 5%	Prob ADF	Keterangan
IPM	Level	-2.039409	-3.690914	0.5422	Tidak
	First Diff	-3.801999	-3.710482	0.00427	Stasioner
	Second Diff	-6.309059	-3.733200	0.0006	Stasioner
ABK	Level	-2.034371	-3.690814	0.5448	Tidak
	First Diff	-3.690835	-3.710482	0.0517	Tidak
	Second Diff	-5.758835	-3.733200	0.0016	Stasioner
TPT	Level	-3.820120	-3.759743	0.0454	Stasioner
	First Diff	-6.524106	-3.710482	0.0003	Stasioner
	Second Diff	-9.931672	-3.733200	0.0000	Stasioner

Based on the table above, it can be concluded that the HDI variable at level level has an ADF value < 5% critical value, namely - 2.039409 < -3.690914, meaning the data is not stationary at level level. The value -3.801999 < -3.710482 means that the data is stationary in the First Different. The value - 6.309059 > -3.733200 means that the data is stationary in the Second Different.

The ABK variable at level level has an ADF value < 5% critical value, namely -2.034371 < - 3.690814, meaning the data is not stationary at level level. The value -3.690835 < -3.710482 means data not stationary at First Different. The value - 5.758835 > -3.733200 means the data is stationary in the Second Different.

The TPT variable at level level has an ADF value < 5% critical value, namely -3.820120 > -3.759743, meaning the data is stationary at level level. The value - 6.524106 > -3.710482 means the data is stationary on First Different. The value -9.931672 > -3.733200 means that the data is stationary in the Second Different.

Determination of Optimum Lag

Table Optimal Lag Test Results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-111.7656	NA	69.30025	12.75174	12.90013	12.77220
1	-87.73233	37.38513*	13.33458*	11.08137*	11.67495*	11.16322*

Based on the criteria of (LR) Sequential Modifie LRtest statistics, FPE (Final Prediction Error), Akaike Information Creterion (AIC), (SC) Schwarz information criteria and Hannan-Quin Information Creterion (HQ) are located at lag 1. Thus in this study the length The optimal lag that will be used is 1. After accumulating, the largest number of stars is located at lag 1. Determining the optimal lag using these criteria is at lag 1 because it has the smallest value or many asterisks among the various lags made, the author takes lag 1 in terms of Sequential Modifie Statistics LRtest value, FPE (Final Prediction Error), Akaike Creterion Information

(AIC), Schwarz Criterion (SC) and Hannan-Quin Kreterion Information (HQ). The purpose of the optimum lag in this research is that all research variables used in the equation influence each other up to one previous period. This means that the dependency ratio (ABK) and open poverty level (TPT) variables influence the human development index (HDI) variable.

Kausalitas Granger

Tabel Hasil Uji GrangerKausalitas

Null Hypothesis:	Obs	F-Statistic	Prob.
ABK does not Granger Cause IPM	18	0.13458	0.7188
IPM does not Granger Cause ABK		3.55155	0.0790
TPT does not Granger Cause IPM	18	0.05608	0.8160
IPM does not Granger CauseTPT		3.44917	0.0830
TPT does not Granger Cause ABK	18	1.38471	0.2576
ABK does not Granger CauseTPT		7.779965	0.0138

The ABK variable has no relationship with the HDI variable, while the HDI variable has a relationship with the ABK variable, so this variable has no reciprocal relationship (causality). The TPT variable has no relationship with the HDI variable, while the HDI has a relationship with the TPT. Therefore in This variable does not have a reciprocal or 2-way relationship. The TPT variable has no relationship with the ABK variable, while ABK also has a relationship with TPT. Therefore, this variable does not have a reciprocal or 2-way relationship.

Cointegration Test

Cointegration Test Table

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.732919	36.37564	42.91525	0.1929
At most 1*	0.421203	13.93215	25.87211	0.6632
At most 2	0.238705	4.636486	12.51798	0.6491

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.732919	22.44349	25.82321	0.1314
At most 1*	0.421203	9.295666	19.38704	0.6937
At most 2	0.238705	4.636486	12.51798	0.6491

The trace statistic value is <critical value and maxeigen <critical value, which means that no cointegration occurs. If using VECM and ARDL, the data must be cointegrated, so the most appropriate method in this research is to use the VAR method.

Hasil Estimasi Vector Autoregression (VAR)

Tabel Hasil UjiVectorAutoregression(VAR)

	IPM	ABK	TPT
IPM(-1))	0.792855	-0.154982	-0.128092
	(0.35325)	(0.65372)	(0.31558)
	[2.24444]	[-0.23708]	[-0.40589]
IPM(-2))	-0.166552	-0.366775	-0.282689
	(0.35268)	(0.65624)	(0.31506)
	[-0.47225]	[-0.56198]	[0.89724]
ABK(-1))	-0.010412	0.721503	-0.029941
	(0.20848)	(0.38580)	(0.18624)
	[-0.04994]	[1.87015]	[-0.16076]
ABK(-2))	0.030492	-0.333437	0.155686
	(0.20642)	(0.38199)	(0.18440)
	[-0.14772]	[-0.87290]	[0.84426]
TPT(-1))	-0.090471	0.895123	0.063217
	(0.37303)	(0.69032)	(0.33325)
	[-0.24253]]	[1.29668]	[0.18970]
TPT(-2))	-0.039296	-0.312242	0.401687
	(0.29248)	(0.54125)	(0.26129)
	[-0.13435]	[-0.57689]	[1.53733]
C	26.15994	64.49904	25.69187
	(28.6476)	(53.0139)	(25.5925)
	[0.91316]	[1.21664]	[1.00388]

Based on the table above with 2.055, then the HDI variable has a positive and significant effect on itself. This can be seen with a value greater than 2.2444> 2.055. ABK does not have a negative and significant effect on HDI because the value is smaller than the value of -0.04994 < 2.055. TPT does not have a negative and significant effect on HDI because the value is smaller than the value, namely - 0.24253 < 2.055.

IRF analysis for the next 18 years can be seen that in the first year the HDI experienced depreciation reaching 1.5 and in the second year there was a shock to the variable itself so that the HDI number reached 0 to 0.5 in the tenth year until the eighteenth year it returned to stability. at number 0.

Meanwhile, the ABK variable from the first year experienced depreciation, increasing by -1 and there were shocks in the fourth year to -1.78 and in the tenth year it returned to a stable figure, reaching its balance or equilibrium point at a value of 0. This means that it took six years for the ABK to experience stability after a shock occurs in the HDI.

Meanwhile, the TPT variable from the first year experienced depreciation, increasing by -0.5 and shocks occurred in the second year to -0.1 and in the eighth year it returned to following the line of stability, reaching its balance or equilibrium point at a value of 0. This means that it took six years for the TPT to experience stability after a shock occurs in the HDI.

Variance Decomposition Analysis

Variant Decomposition Table

Variance Decomposition of IPM:

Period	S.E.	IPM	ABK	TPT
1	1.361505	100.0000	0.000000	0.000000
2	1.765715	99.74043	0.075137	0.184428
3	1.899220	98.90000	0.631062	0.468933
4	1.948715	98.26029	1.110747	0.628963
5	1.971629	97.98479	1.271050	0.744162
6	1.984222	97.87227	1.292427	0.835303
7	1.993203	97.80040	1.289046	0.910553
8	2.000770	97.74944	1.283575	0.966989
9	2.007523	97.71184	1.279442	1.008714
10	2.013334	97.68314	1.277140	1.039717
11	2.018083	97.66026	1.276322	1.063415
12	2.021813	97.64196	1.276287	1.081750
13	2.024690	97.62747	1.276483	1.096047
14	2.026901	97.61615	1.276644	1.107208
15	2.028605	97.60736	1.276717	1.115923
16	2.029926	97.60055	1.276731	1.122720
17	2.030956	97.59526	1.276718	1.128017
18	2.031761	97.59116	1.276701	1.132143
19	2.032390	97.58795	1.276687	1.135358

Analysis of Variance Decomposition exchange rates in Table 4.7 can be seen that initially the HDI was still very much influenced by the HDI itself, namely 100%, where ABK and TPT had not had any influence at all. However, in the following years the shock contribution of ABK and TPT experienced increases and decreases until in the 19th year ABK was 1.27 percent and TPT was 1.13 percent. This follows a decrease and increase in the proportion of HDI shocks to the HDI variable itself, but until the 19th year the contribution was still relative, namely 97.58 percent.

Discussion

The Relationship between ABK and IPM

Based on the results of the tests that have been carried out, it can be concluded that ABK does not have a negative and significant effect on HDI because the value is smaller than the value, namely -0.047225 < 2.055. The relationship between the dependency ratio has a negative influence on HDI, which means that if the dependency ratio increases, the HDI figure will decrease accordingly. On the other hand, if the dependency ratio decreases, the HDI will

increase. This happens because when people are no longer working or have not worked, they will be considered to be a national burden. Due to this burden, it can be seen that the HDI value will weaken further, which is considered to be able to be productive again (Zuhairoh and Melaniani, 2018).

Based on the hypothesis in the previous chapter, ABK results have an effect on HDI, but in the results of this research it was found that ABK had no effect on HDI, this could happen because the HDI value in South Sumatra province is more emphasized on health and education figures, whereas it has a good value seen from the government financial assistance which is always disbursed every year in South Sumatra province

The Relationship between TPT and HDI

Based on the results of the tests that have been carried out, it can be concluded that tobacco imports do not have a negative and significant effect on economic growth because the value is smaller than the value, namely - 0.24253 < 2.055. The relationship between the open unemployment rate has a negative influence on the HDI, which means that if the TPT increases then the HDI figure will decrease and vice versa, if TPT decreases, HDI will increase. This happens because when people are unemployed, it means that people do not have sufficient knowledge in the field of education so they can be unemployed. For HDI itself, one of the HDI indicators is education. It can be seen that weak education which results in unemployment will have an effect on HDI (Chalid et al, 2014).

Based on the hypothesis in the previous chapter, the results of TPT have an effect on HDI, but in the results of this research, it was found that TPT has no effect on HDI. This could happen because the unemployment rate in the province is relatively high, but this figure can be covered by daily livelihoods. Some people do not work permanently but they earn income by working daily freelance with a relatively high income value too.

CONCLUSION

In the cointegration test the trace statistical value<critical value and maxeigen<critical value which means that no cointegration occurs. If using VECM and ARDL, the data must be cointegrated, so the most appropriate method in this research is to use the VAR method. By using the Granger Causality analysis method, all the variables studied, namely ABK, TPT and HDI, do not have a two-way reciprocal relationship. Using the Vector Auto Regression (VAR) model, the research can conclude that the HDI variable has no negative and significant effect on itself, ABK has no negative and significant effect on HDI and TPT has no negative and significant effect on HDI. Variance Decomposition: Initially the HDI was still very much influenced by the HDI itself, namely 100%, where ABK and TPT had no influence at all. However, in the following years the shock contribution of ABK and TPT experienced increases and decreases until in the 19th year ABK was 1.27 percent and TPT was 1.13 percent. This follows a decrease and increase in the proportion of HDI shocks to the HDI variable itself, but until the 19th year the contribution was still relative, namely 97.58%

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