

Dynamics of Population Happiness Level Between Archipelagic and Non-Archipelago Provinces In Indonesia

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Abstract

Welfare has a fundamental dimension related to the level of happiness. Therefore, from the perspective of development success, welfare indicators should be able to describe the condition of better happiness of the population between regions in a country. Recently, the measure of the population's happiness level has become an indicator of welfare with a broader dimension. One of them is through the happiness index. This study aims to analyze the differences in the dynamics of the population's happiness level between island and non-island provinces in Indonesia, during 2014-2021. This dynamic is thought to be influenced by the poverty level, quality of human development, unemployment rate, and income distribution between community groups. The analysis method used is panel data from 34 provinces, including eight island provinces and 26 non-island provinces. After passing the model specification and classical assumption tests, the estimation model applies a fixed effect model with the Panel Estimation General Least Squares (EGLS) method. The results of the model estimation found that the unemployment rate did not have a significant effect on the happiness index. Meanwhile, the poverty rate, human development index, and Gini Ratio had a positive and significant effect. It was also found that there were differences in the dynamics of happiness levels between island and non-island provinces, as a result of changes in the independent variables in the model.

Keywords: happiness index, islands, non-island, EGLS panel

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Introduction

By nature, humans have a life goal to achieve well-being. Both personally and in the community. Well-being basically has a fundamental dimension related to the level of happiness. As a permanent trait, happiness can be interpreted as a feeling of satisfaction with life. (<https://www.collinsdictionary.com/es/>). Therefore, from the perspective of development success, welfare indicators should be able to describe the condition of better happiness of the population. Most people believe that happiness is the essence of a meaningful life. (Natalio & Fernández-Berrocal, 2014). Development policy makers in various countries currently believe that the use of welfare indicators has taken up a larger share than macroeconomic indicators. (OECD, 2019). Even subjectively, welfare is not only a desire, but can also positively dynamize the country's productivity and economic performance. (DiMaria et al., 2020). In addition, to ensure that the happiness of the population of a region can be achieved optimally, comprehensive measurements are needed for a number of factors other than material. This also includes focusing on a correct

understanding of happiness at the individual, family, community, and environmental levels. (Jain et al., 2019).

Recently, the measure of the population's happiness level has become a parameter for measuring the population's welfare with a broader dimension. One of them is using the happiness index (HI). This index describes subjective welfare indicators in three dimensions and complements objective indicators. The Central Statistics Agency (BPS) classifies the three dimensions, including: First, the dimension of life satisfaction; Second, the dimension of the meaning of life (eudaimonia); and Third, the dimension of feelings (affect).

Based on the World Happiness Report 2023, Indonesia scored 5.277 on the happiness index (HI) in 2023. With that score, Indonesia is ranked 84th out of 137 countries involved in this study. At the Southeast Asian level, the Indonesian people's happiness level is ranked sixth out of the nine countries studied. The life satisfaction of the Indonesian people is only higher than that of Laos, Cambodia, and Myanmar. Singapore is the happiest country in Southeast Asia, as well as Asia, with a score of 6.587 and is ranked 25th at the world level (<https://worldhappiness.report/>). Then what about the Happiness Index between provinces in Indonesia? Especially between provinces with island and non-island characteristics.

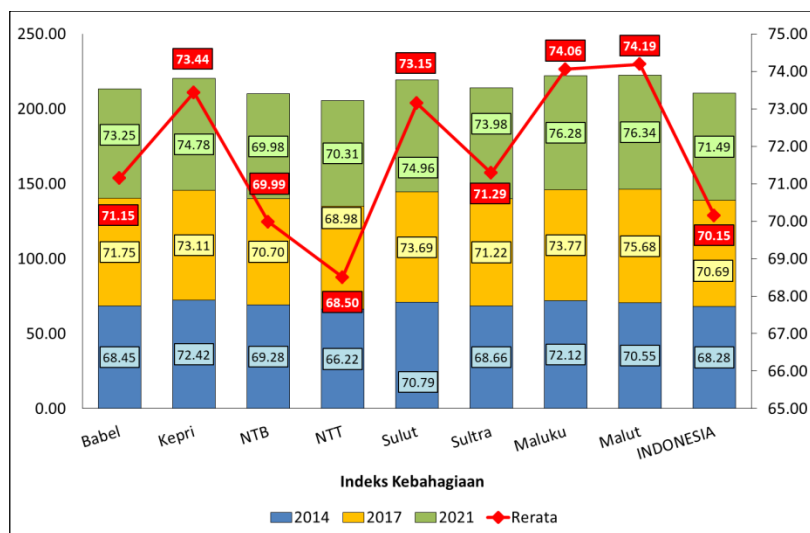


Figure 1. Happiness Index of Island Provinces in Indonesia, 2014-2021

Source: <https://www.bps.go.id/>. Reprocessed, 2024

Overall, Indonesia's Happiness Index (HI) in 2021 increased by 0.8 points to 71.49 compared to 2017, which was 70.69. Most provincial areas also experienced the same thing. The HI value in 2021 increased from 2017, with an average score of 70.15 (Figures 1 and 2). North Maluku Province (Malut) is one of the eight happiest island provinces with an average HI score of 74.19. In fact, the trend has increased from 2014 to 2021. Then, Maluku had an average score of 74.06, with an increasing trend over the same period. East Nusa Tenggara (NTT) is an island province with the lowest HI score, with an average of 68.50. This score appears to fluctuate between 2014 and 2021 (Figure 1).

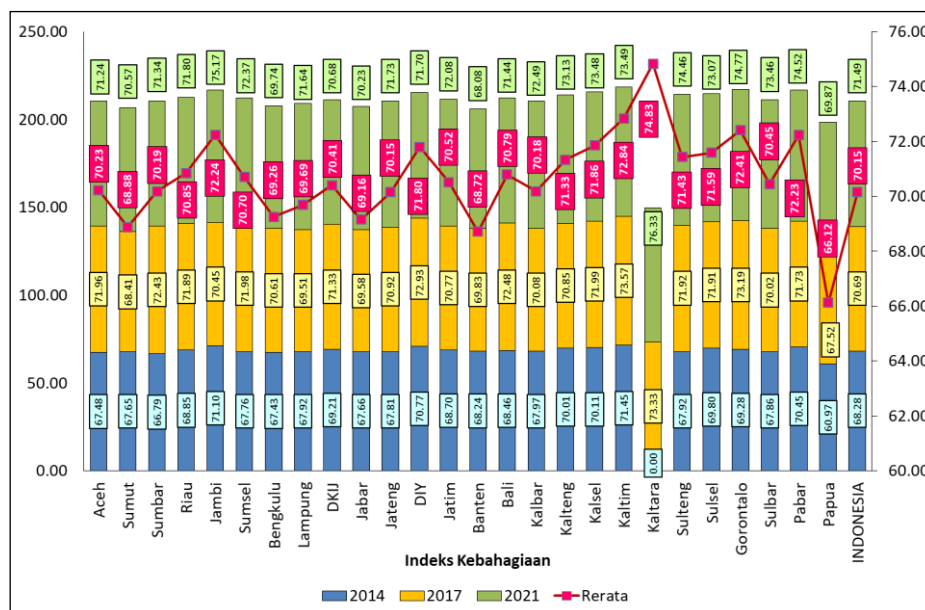


Figure 2. Happiness Index of Non-Island Provinces, 2014-2021

Source: <https://www.bps.go.id/>. Reprocessed, 2024

North Kalimantan Province (Kaltara) is one of the non-archipelago provinces with the highest level of happiness among the 26 non-archipelago provinces in Indonesia during 2014-2021. The average HI score of this province reached 76.33 (Figure 2). Although in 2014 the HI figure was not yet available, in 2021, this province still had the highest HI score compared to other non-archipelago provinces. Meanwhile, Papua Province is a non-archipelago province with a very low level of happiness (HI), with an average of only 66.12. It can be seen that the island province has an average level of happiness that is still higher than that of the non-archipelago province (Figure 3). Even Maluku, as an island province, has the highest level of happiness of all provinces in Indonesia, both based on the average HI score and each year.

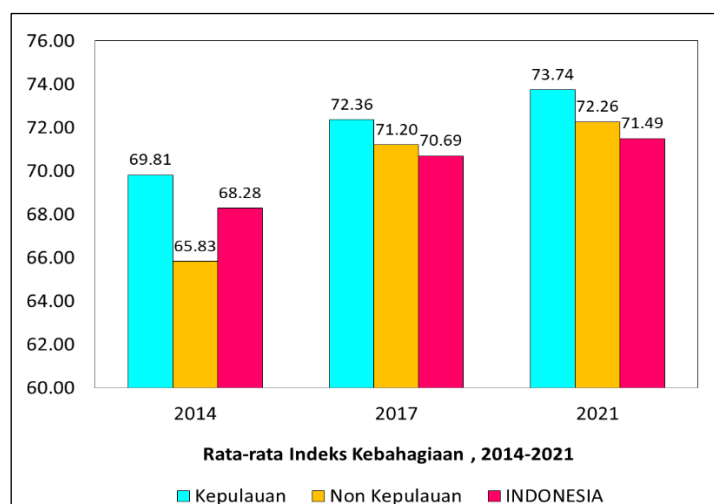


Figure 3. Average Happiness Index of Island and Non-Island Provinces, 2014-2017

Source: <https://www.bps.go.id/>. Reprocessed, 2024

Ironically, although the HI figure for North Maluku Province is the highest nationally, the poverty rate in this province increased in 2021 compared to 2017. Meanwhile, Aceh, West Sumatra (Sumbar), Riau, Bengkulu, in DI Yogyakarta (DIY), and West Nusa Tenggara (NTB) saw their poverty rates decrease along with the decrease in HI. A contradictory condition is also seen in the HDI achievement in 2017 and 2021. All provinces experienced

an increase in HDI, but this did not increase the HI figure in all provinces. This paradoxical condition also occurs in the Open Unemployment Rate (TPT) in North Maluku Province. The figure increased from 2017 to 2021, but the HI figure actually increased. This is different from Aceh, Riau, and East Kalimantan (Kaltim). The decrease in the TPT value in that year coincided with a reduction in the HI figure. The same situation is also seen in the Gini Ratio (RG) figures in Aceh, Sumatra, Bengkulu, DKI Jakarta (DKIJ), Banten, and Bali. These provinces experienced a decrease in RG in 2017 compared to 2021 and a decrease in the HI (<https://www.bps.go.id/>).

The dynamics of the population's happiness level and several macroeconomic indicators between island and non-island provinces revealed above appear quite diverse. Especially during 2017-2021. How is the relationship between HI and macroeconomic indicators, namely poverty, unemployment, human development index (HDI), and Gini ratio (RG)? It seems that it needs to be juxtaposed to find out the relationship with the level of happiness (BPS, 2021). Several empirical studies have examined the phenomenon of this relationship. Including using various determinant variables. Such as The Last Supper (2020) In a comparative study of the Happiness Index of five ASEAN countries. The empirical findings concluded that the GDP per capita and environmental index variables significantly affect HI. However, unemployment has no considerable effect. This study also found that the individual effect (cross-section effect) between countries in ASEAN from differences in HI is the largest in Singapore, while the smallest is the Philippines.

Another empirical study in Peru found that happiness levels were negatively related to poverty. (Mateu et al., 2020) This means that financial conditions are not always related to subjective happiness, and unemployment has a heterogeneous impact on the level of subjective well-being. (Luo, 2020) This relationship, on the other hand, tends to be negative in Indonesia. This means relatively high happiness levels are found in areas with low unemployment rates. (Central Bureau of Statistics, 2021). Based on this phenomenon, this study aims to analyze the influence of poverty levels, HDI, open unemployment rates, and Gini ratios on the dynamics of population happiness levels between island and non-island provinces in Indonesia.

Analysis Method

This study uses a panel data regression method covering 34 provinces in Indonesia. All provincial units include eight island provinces and 26 non-island provinces. The time units include the observation periods of 2014, 2017, and 2021. This observation period is adjusted to the three-year publication period of the Happiness Index data from the Central Statistics Agency (BPS). All research data was obtained from the official BPS website. The classification of the eight island provinces in this study refers to the 2018 Batam Declaration concerning island provinces, although it has not been formally regulated in legislation. The eight provinces include: Riau Islands (Kepri), Maluku, North Maluku (Malut), East Nusa Tenggara (NTT), West Nusa Tenggara (NTB), Bangka Belitung (Babel), North Sulawesi (Sulut), and Southeast Sulawesi (Sultra). The research model refers to the model used by The Last Supper (2020); Suparta & Malia (2020); and The Last Supper (2022); then adjusted to the objectives of this research. This research model is presented as follows:

Notation $i = 1, 2, 3, \dots, 34$ is the cross-section unit of the entire province covering eight island provinces and 26 non-island provinces; $t = 2014, 2017$ and 2021 , is the time unit; H_{it} is the Happiness Index of the i -th province and the t -th period; POV_{it} is the poverty rate of the i -th province and the t -th period; HDI_{it} is the Human Development Index of the i -th province and the t -th period; $UNEM_{it}$ is the Open Unemployment Rate of the i -th province and the t -th period; GR_{it} is the Gini Ratio of the i -th province and the t -th period; and ε_{it} is the error term. The estimation of this research model begins with a model specification test, namely the Chow Test, the Lagrange Multiplier (LM) Test, and the Hausman Test. Likewise, the classical assumption test (Gujarati & Porter, 2009; Wooldridge, 2013; Baltagi, 2005).

Results and Discussion

The discussion of the results of this study begins with the results of descriptive statistical analysis and testing of the research model. Table 1 shows that, based on panel data from 34 provinces during the study period, the number of observations (n) was 102 for all research variables. The average value (mean) of each variable includes: Happiness Index (Hlit) of 70.28422; poor population (POVit) of 10.90853; Human Development Index (HDIit) of 69.69873; open unemployment rate of 5.278922; and Gini Ratio (GRit) of 0.365765. This value explains that the data of each variable is, on average, distributed between the minimum and maximum values.

Four variables, Hlit, POVit, UNEMit, and GRit, have a minimum value of 0.0000. This shows that the data distribution of the four variables in certain years is zero, in contrast to the HDlit variable, which has a minimum value of 56.75000. On the other hand, all variables have varying maximum values and standard deviations.

Table 1. Descriptive Statistics Results of Research Variables

Mark	Hlit	POVit	HDlit	UNEMit	GRit
Mean	70.28422	10.90853	69.69873	5.278922	0.365765
Maximum	76.34000	27.80000	81.11000	10.51000	0.459000
Minimum	0.000000	0.000000	56.75000	0.000000	0.000000
Std. Dev.	7.463083	5.780333	4.251495	1.973274	0.057467
Jarque-Bera	25529.58	19.40063	4.442747	4.126335	970.3064
Probability	0.000000	0.000061	0.108460	0.127051	0.000000
Observations	102	102	102	102	102

Source: Eviews data processing results (2024)

The data description in Table 1 also shows that only the HDlit and UNEMit variables are normally distributed, because the Jarque-Bera values of both have a probability > 0.05. In contrast, the other three variables are not normally distributed. Overall, these findings are in accordance with the results of the normality test in this research model, where the Jarque-Bera value is 1733.093 and the probability is $0.000 < 0.05$. However, normality testing is not a mandatory requirement in the panel data model, so the estimation of this research model can be continued.

Table 2. Results of the Variance of Inflation Factor (VIF) Test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	204.9597	550.0791	NA
POV	0.021126	8.622746	1.875851
HDI	0.042141	551.4559	2.024270
UNEM	0.109464	9.319561	1.132719
GR	128.6607	47.32534	1.129161

Source: Eviews data processing results (2024)

Although classical assumption testing in the form of normality tests and multicollinearity tests in panel data models is not a requirement in model testing, it is still used as a complement to testing in this study. The panel data model is one approach to overcoming the multicollinearity problem in classical regression. (Gujarati & Porter, 2009; Wooldridge, 2013; Baltagi, 2005). Table 2 shows the results of the multicollinearity test through the Variance of Inflation Factor (VIF) value. The results of this test found that all variables did not contain multicollinearity problems, because the Centered VIF number <10.

The following classical assumption tests are the autocorrelation test and the heteroscedasticity test. The goal is to obtain convincing research model estimation results and determine the appropriate form of the panel data model. Table 3 presents the results of the autocorrelation test based on the Durbin-Watson value or DW(d) statistic.

Table 3. Durbin-Watson Autocorrelation Test Results (d)

Criteria	k = 4 and $\alpha = 5\%$		
N	102	DW (d)	1.385
dL	1,592	4-dL	2.408
dU	1,758	4-dU	2.242
Information: k = independent variable	0 < d < dL = Positive autocorrelation		

Source: Eviews data processing results (2024)

The results of this test indicate that there is an autocorrelation problem in the research model. This is indicated by the DW (d) value of 1.385. This figure is in the area $0 < d < dL$, which is the positive autocorrelation area in $\alpha = 5\%$. This test is reinforced by the Residual Cross-Section Dependence Test (Table 4).

Table 4. Test Results: Residual Cross-Section Dependence Test

Test	Statistics	df	Prob.
Breusch Pagan LM	919.3088	561	0.0000
LM scaled message	10.69698		0.0000
CD Order	20.86729		0.0000

Source: Eviews data processing results (2024)

All testing criteria, including: Breusch-Pagan LM test, Pesaran scaled LM, and Pesaran CD, were found to have a probability value of $0.0000 < 0.05$. This means that the estimation model contains autocorrelation. The next test result is the heteroscedasticity test. The test uses the Cross-section Heteroskedasticity and Period Heteroskedasticity. Both apply the Likelihood ratio (LR) value criteria. Table 5 shows the results of both tests, which found a probability LR value of $0.0000 < 0.05$. This means that the research model contains heteroscedastic problems.

Table 5. Test Results Heteroscedasticity

Cross-section Heteroskedasticity			
	Value	df	Probability
Likelihood ratio	233.3822	34	0.0000
Period Heteroskedasticity LR Test			
	Value	df	Probability
Likelihood ratio	110.6786	34	0.0000

Source: Eviews data processing results (2024)

For the estimation of this research model not to produce weaknesses in predicting the dynamics of the level of happiness of the population between provinces due to containing autocorrelation and heteroscedasticity problems, an appropriate and efficient form of panel data model specification is needed. This is carried out through the Chow, LM, and Hausman tests. This Chow test is conducted to determine whether the correct one is the common effect model (CEM) or fixed effect model (FEM).

Table 6. Results of the Chow Test and the Hausman Test

	Effects Test	Statistics	df	Prob.	Selected Models
Chow Test	Cross-section F	5.186922	(33.64)	0.0000	FEM
	Cross-section Chi-square	132.744724	33	0.0000	
Hausman Test	Test Summary	Chi-Sq. Statistic	Chi-Sq. df	Prob.	FEM
	Random cross-section	94.435756	4	0.0000	

Source: Eviews data processing results (2024)

The Chow test results (Table 6) produce a Cross-section Chi-square prob. value <0.05, meaning that the more appropriate estimation model uses FEM. The next test no longer applies the LM test. Mainly to compare CEM with the random effect model (REM). The reason is because FEM has been selected as the best model compared to CEM. Unless the opposite result is found, direct testing applies the Hausman test. Specifically comparing the advantages of the REM model with FEM. The Hausman test results found a Chi-sq. Statistic prob. value of Cross-section random <0.05. This means that the appropriate estimation model to use is FEM.

Table 7. Estimation Results of the Research Model with Fixed-Effect Model

Method: Panel EGLS (Cross-section weights)			
Dependent Variable: Hlit			
Variable	Coefficient	t-Statistic	Prob.*
C	-97.97256	-4.007752	0.0002
POVit	1.845287	5.729096	0.0000
HDIit	1.965842	7.700859	0.0000
UNEMit	0.192380	1.383036	0.1715
GRit	27.60021	3.315374	0.0015
R-squared	0.828387	Multicollinearity	No
Adjusted R-squared	0.729173	Heteroscedasticity	No
F-statistic	8.349521	Autocorrelation	No
Prob(F-statistic)	0.000000		

Note: *) Significant 5%.

Source: Eviews data processing results (2024)

Since FEM is the best model, to overcome autocorrelation and heteroscedasticity in the research model, the Panel Estimation General Least Square (EGLS) method is applied. This model is in the form of FEM weighted with cross-section weight and uses the Coefficient covariance method: Cross-section white (Sihombing, 2022). This model is assumed to be free from autocorrelation and heteroscedasticity problems (Table 7). The estimation results of this research model met the goodness of fit test criteria. This is indicated by the value Adjusted R-squared of 0.729173 and the F-statistic probability <0.05, or significant at a 5% confidence level. The model equation is stated as follows:

$$Hlit = -97.9726 + 1.8453POVit + 1.9658HDIit + 0.1924UNEMit + 27.6002GRit + \varepsilon_{it} \quad (2)$$

Based on the regression results, the open unemployment rate variable (UNEMit) does not significantly affect the happiness index (Hlit). Meanwhile, the poverty rate variable (POVit), human development index (HDIit), and Gini Ratio (GRit) all have a positive and significant effect at the 5% level. The results of model specifications (2) explain that every increase in the percentage of poor people, human development index (HDI), and Gini Ratio of 1% each will increase the Happiness Index between provinces in Indonesia by 1.8453%, 1.9658%, and 27.6002%. The difference in the regression coefficients of these three

variables shows that the impact of the increase in the happiness index is greater due to the rise in the Gini Ratio compared to the human development index and poverty.

Table 8. Cross-section effect on Island Provinces

No	Province	Cross-Section Effect
1	Babel	13.71584
2	Riau Islands	1.707796
3	NTB	-3.082341
4	NTT	-6.885775
5	North Sulawesi	3.529709
6	Southeast Sulawesi	-2.389683
7	Maluku	-5.038886
8	North Maluku	18.14691
Average:		-4.34917

Source: Eviews data processing results (2024)

The F-statistic value is 8.349521, with a Probability < 0.05, which shows that POVit, HDlit, UNEMit, and GRit positively and significantly affect the Hlit variable. Meanwhile, the R-squared value of 0.828387 indicates that all explanatory variables in the model can explain the variation of changes in HDI as an independent variable of 82.84%. Other variables outside the model influence the remaining 17.16%.

The poverty level variable positively and significantly affects the happiness index. This indicates that the poverty level of the population increases along with the increase in the level of happiness in the island and non-island provinces. This means that even though the number of poor people increases, it does not impact the feeling of joy experienced by the community. In other words, the sense of pleasure continues to grow even though people live in poverty. This finding is different from the studyMateu et al., (2020);The Last Supper (2022); The Last Supper (2020); AndNidup et al., (2018) AndNidup et al., (2018). All these studies found the opposite: the influence of poverty actually lowers the level of happiness. EvenGoddess (2020)found no influence of poverty on the level of happiness of the population in Indonesia.

Two other variables that also have a positive and significant effect on the population's happiness level are the Human Development Index and the Gini Ratio. Specifically for the HDI,Elvirawati (2021)AndThe Last Supper (2022);The Last Supper (2020) found a similar phenomenon, where this variable greatly influenced the increase in the happiness index in Indonesia. Meanwhile, for the influence of income level, The Last Supper (2020)We actually found a similar phenomenon in ASEAN countries, especially when using GDP per capita as an indicator of income level.

Different fromHuang (2019), which expresses empirical findings that there is a tendency for people to be happier in areas with low income levels. The impact of these two variables on the population's happiness level between island and non-island provinces is very rational and realistic. The reason is that increasing human resources (HR) quality will lead to higher happiness. Likewise, the more even the level of income between community groups, the more community happiness will increase. However, the impact of increasing the level of happiness of the population between island and non-island provinces is more due to increasing income distribution between residents than improving the quality of HR and poverty levels. On the other hand, the open unemployment rate does not significantly

affect the happiness index between island and non-island provinces. This finding is identical to The Last Supper (2020), in case studies in ASEAN countries. However, Luo (2020) In its empirical perspective, it was found that this variable has a heterogeneous impact on the level of subjective well-being.

Table 9. Cross-section effect on non-island provinces

No	Province	Cross-Section Effect	No	Province	Cross-Section Effect
1	Aceh	-11.10208	14	Banten	3.106372
2	North Sumatra	0.814344	15	Bali	2.951621
3	Boast	6.217132	16	West Kalimantan	12.69047
4	Riau	2.976183	17	Central Kalimantan	11.77209
5	Jambi	7.231668	18	South Kalimantan	14.11458
6	South Sumatra	-1.84026	19	East Kalimantan	0.452048
7	Bengkulu	-10.07867	20	North Kalimantan	-3.98223
8	Lampung	-0.716975	21	Central Sulawesi	0.337574
9	DKIJ	-9.414476	22	South Sulawesi	1.490724
10	West Java	0.016367	23	Gorontalo	-4.482854
11	Central Java	-4.982919	24	West Sulawesi	8.664813
12	DIY	-21.58897	25	Pabar	-8.713316
13	East Java	-2.590582	26	Papua	-13.04623
Average:					-7.71163

Source: Eviews data processing results (2024)

The results of the cross-section effect analysis show that North Maluku is an island province that has a dominant cross-section effect. (Table 8). In particular, the effect of increasing the population happiness index, with a figure of 18.14691. Meanwhile, NTT Province has a more dominant individual effect on the decline in the happiness index, which is -6.885775.

Next, the numbers cross-section effect. The largest for non-island provinces was found in South Kalimantan Province (Kalsel), which was 14.11458. The dominant decrease in the happiness index came from the DIY Province, which was -21.58897 (Table 9). This figure expresses that if there are changes in the percentage of poor people, Human Development Index, Open Unemployment Rate, and Gini Ratio, both overall and per capita, North Maluku Province will experience an increase in the happiness index of 18.15%. On the other hand, NTT Province will experience a decrease of 6.89% in the happiness index. Suppose there is a change in the percentage of poor people. In that case, the Human Development Index, the Open Unemployment Rate, and the Gini Ratio, both overall and per capita, in

South Kalimantan Province will experience an increase in the happiness index of 14.11%. On the contrary, DIY Province will experience a decline in the happiness index of 21.59%.

Overall, the differences in the dynamics of happiness levels between island and non-island provinces are the average cross-section effect values of the two groups of provinces. The island province group has an average cross-section effect figure of -4.34917, and the non-island province group is -7.71163. This means that the impact of the decline in happiness in the island province group due to changes in the poverty rate, human development index, and Gini Ratio will occur at 4.35%. In comparison, in the non-island province group, it is 7.71%. This implicitly indicates that the dynamics of the population's happiness level between island and non-island provinces appear different. The effect of changes in the average level of poverty, human development index, and Gini Ratio in island provinces only has a small impact on the decline in the population's happiness level compared to non-island provinces.

Conclusion and Suggestions

The dynamics of the population's happiness level between island and non-island provinces in Indonesia are greatly influenced by the level of poverty, the Human Development Index, and the Gini Ratio. The influence of these three variables is positive and significant. While the open unemployment rate has a positive but insignificant effect. Ironically, this finding shows that provinces with high poverty rates actually achieve an increase in population happiness. Not the other way around. In contrast to provinces with a high human development index and an increasingly even distribution of community income. Of course, this would be very logical if there were an increase in the level of population happiness.

The cross-section effect value of the island province shows that the impact of changes in poverty rates, human development index, and Gini Ratio will increase the level of happiness more in North Maluku. On the other hand, the decline has the most significant impact on East Nusa Tenggara. The same effect of change for non-island provinces will increase the population's happiness level more in South Kalimantan. The most critical impact of the decline occurs in the Special Region of Yogyakarta Province. The effect of changes in the average of the three variables in the island provinces only has a small impact on reducing the level of happiness compared to non-island provinces. The government is expected to be more concerned about prioritizing human resource development programs, more equitable income distribution, poverty alleviation, and reducing unemployment rates to increase the level of happiness of the population between island and non-island provinces in Indonesia.

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