



Analysis of Economic Growth at Poverty Level With Meta-Analysis

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ABSTRACT

This study aims to determine the impact of economic growth on the poverty rate by meta-analysis using Stata 15.0 software. The number of observations used was 41 research articles in Indonesia which examined the relationship between economic growth and poverty levels. In general, the results of his research show a negative effect with a parameter coefficient value of -0.170 percent. This is influenced by the type of data and the number of observations that have a significant effect. In variable data types, if the data used is panel data it produces a stronger negative relationship than using time series or cross section data types. In the number of observations variable, the more the number of observations (N) used tends to produce a positive coefficient value, research that produces a negative coefficient value occurs in certain cases regarding the relationship of economic growth to the poverty level. Of the 41 research articles analyzed through the meta funnel plot of the standard error coefficient, it is known that there is publication bias, as seen from the study with a small sample size that is not symmetrically distributed. From the research results produced in this study, it implies that every increase in economic growth in each region or area increases by one percent, it will reduce the poverty rate by -0.170 percent. Differences in research results regarding the relationship between economic growth and poverty rates are influenced by the type of data and the number of observations used in the research.

Keywords: Economic growth, Poverty Rate, Meta-Analysis

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INTRODUCTION

In general, countries in the world have the main goal of improving the standard of living and welfare of all their people through increased economic development. Development is a multidimensional process in accelerating economic growth, reducing inequality, and alleviating poverty (Haryanto, 2022). Economic growth and poverty are important indicators to see the success of a country's development. High growth cannot guarantee a low income gap, many developing countries have economic growth rates above 7 percent, but poverty rates are also high (Apriliani et al., 2020).

According to Leibenstein in (Cahyanti et al., 2020) explains that underdeveloped or developing countries are still shackled by a vicious circle of poverty which keeps them at a low level of income per capita. According to Leibenstein, every economy is affected by "shocks" and "stimuli", shocks have an impact on decreasing per capita income previously, while stimuli tend to increase. The cause of an underdeveloped country is that the amount of stimulus is too small and the shock is too great. If the stimulus is greater than the shock, the economy will be on the development line (Cahyanti, N D., et al., 2020).

Indonesia is one of the developing countries which is currently facing the problem of poverty. In general, in developing countries such as Indonesia, the problem of low income and poverty is a major problem in economic development. Poverty in Indonesia is still relatively high with fluctuating development. The number of poverty in 2012 was 28590,2 people and decreased in 2013 to 28553,9. In 2014 there was also a decrease in the number of poor people to 27727,8 people, but in 2015 there was an increase. And the number of poor people in Indonesia in September 2019 reached 25,14 million people or around 9.41% of the total population. This

number decreased by 530 thousand people compared to the position in September last year and a decrease of 805,000 people compared to the position in March last year (Central Bureau of Statistics, 2021).

In 2019, the number of poor people reached 25,14 million people or around 9,36 percent which is the lowest poverty rate since 1999. However, entering 2020, the poverty rate in Indonesia has again increased to 9,78 percent or 26,42 million population caused by the increase in prices of staple goods during the Covid-19 pandemic. The pandemic has also had an impact on reducing the income of residents at all levels of society (all income categories) and has prompted changes in behavior and economic activity. In the first quarter of 2020 economic growth experienced a slowdown, with an average per capita expenditure per month below the poverty line. This is a trigger for poverty, especially for people who are included in the poor vulnerable group, dominated by people who live in rural areas, People's Welfare Indicators (Central Bureau of Statistics, 2020).

Until now, the percentage of poor people living in rural areas is still above ten percent. In 2020, for example, 12,82 percent or 15,26 million people in rural areas are categorized as poor. Meanwhile in urban areas the number of poor people in the same year was recorded at 7,38 percent or as many as 11,16 million. This number increased compared to the previous year where the poverty rate was recorded at 6,69 percent (Central Bureau of Statistics, 2020).

In looking at a country's overall economic performance, it can be seen from its economic growth. Indonesia's Gross Domestic Product (GDP) both at current prices and at constant prices has decreased from 2019 of 10.949.037,80 billion rupiahs, decreased in 2020 of 10.722.442,7 billion rupiahs. This indicates that economic growth has a negative relationship with poverty (Central Statistics Agency, 2020).

Economic growth and poverty are closely related, economic growth is often used as a measure of the economic performance of a region. However, high economic growth does not necessarily increase the welfare of its people (Tri et al., 2022). According to Simon Kuznets in (Faliato, 2020) explains that economic growth and poverty have a very strong correlation, because in the early stages of the development process the poverty rate tends to increase, and when approaching the final stage of development, the number of poor people gradually decreased. Thus, economic growth has a negative effect on poverty.

In the theory of the *trickle-down effect*, Arthur Lewis explains that the prosperity obtained by a group of people automatically trickles down, thus creating jobs and various economic opportunities which ultimately result in an even distribution of economic growth (Bintang & Woyanti, 2018).

Robert Solow (in Tambunan, 2011) put forward a model of economic growth called the Solow growth model. The model departs from the aggregate production function as follows: $(Y = AF(K, L))$. Where Y is national (regional) output, K is physical capital, L is labor and A is technology, Y will increase if there is a development of technological progress indicated by an increase in A. Thus, national economic growth comes from input growth and development progress technology, which is also known as the total productivity growth factor. The solitary model can be expanded to include natural resources as one of the inputs (Todaro, MP, et al. 2003). Another expansion of the Solow model is to include human capital as capital. Lucas stated that the accumulation of human capital can affect economic growth. In simple terms, the aggregate production function can be explained as follows: $(Y = AF(K, H, L))$ (Niyimbanira, F. 2017).

In the equation above, H is human

resources which is the accumulation of education and training. The contribution of each input in this equation to national output is proportional. A country that pays more attention to the education of its people is *ceteris paribus* better than one that does not (Didu & Fauzi, 2016).

In other words, investment in human resources through educational advancement will produce higher national income or economic growth. If this investment is carried out relatively evenly, including towards low-income groups, then poverty will be reduced. So it can be concluded that if output growth increases which is influenced by investment in human resources, it can reduce poverty (Sari, 2019). According to Todaro, in several developing countries, they feel that high economic growth is not able to provide benefits to the poor. Roemer and Gugerty state that the economic growth that is occurring cannot reduce poverty, so distribution must be more even (Fitriana, 2019).

There are many studies that discuss and analyze the effects of economic growth on poverty levels, but produce different conclusions. Causes the reality that there is no research that is free from errors in research, even though researchers have tried to minimize errors or errors (Budhijana, 2019). Because the analysis in the meta-analysis is based on artifact information as a criterion for understanding why there are differences in research results on the same topic, this will be corrected so as not to bias the estimation of the actual research results (Widhiastuti, 2022). Meta analysis is the right method for producing research that is systematic, comprehensive, broad, thorough, thorough and covers many things (Retnawati et al., 2018).

Meta analysis is a form of quantitative research that uses numbers and statistical methods from several research results to organize, integrate, and extract information from the data obtained. Meta analysis is used to analyze empirical stud-

ies that have been conducted by previous researchers, which are quantitative research results that can be compared, for example the mean, correlation *coefficients*, and odds-ratio. The results of this study are used as material for calculating the *effect size*, which is used to compile aggregates. In addition, meta-analysis is also used to test comparable constructs and relationships (Syafiq & Suprayogi, 2020). Apart from that, it is also used to test the influence of other factors (moderating variables) which can explain differences in research results in the same study, such as gender, year of study, research object, and differences in methods used (Rasyid, 2021).

Meta-analysis cannot be used to summarize theoretically presented papers, review qualitative studies, case studies, ethnography, naturalistic findings and policy proposals. But it can only be used in quantitative research with conceptually comparable research results that have the same constructs and relationships. Then, the results of studies that have statistically similar results, so it is not appropriate to combine studies with different research designs and research results even though the research topic is the same (Ngafiyah & Otok, 2014).

Based on the background of the study described above, the researchers collected various studies on the same topic, namely the relationship between economic growth and poverty levels, using meta-analysis methods that were processed using statistical tools, and interpreted from the regression results. The data used in this study is secondary data obtained from previous studies. There are 41 Indonesian articles with case studies in Indonesia, both research at the national, provincial and district/city levels with various types of data used. Of the 41 articles analyzed, there were 15 studies that had significant results and had a negative effect, while the rest had results that did not have a signifi-

cant effect on economic growth at poverty levels.

This study aims to analyze the average coefficient value, moderating variables that have a significant effect on the coefficient value and the publication bias of the research on the relationship between economic growth and poverty levels.

It is hoped that the results of this research can contribute ideas as study material for further research relevant to the theme of the relationship between economic growth and poverty. The independent variables focus more on the selection of data types and the number of observations. In addition, this research is expected to provide solutions for policy makers at both national and regional levels to increase the rate of economic growth, exceeding the population growth rate. In this way, per capita income will increase, thereby increasing the prosperity of society and ultimately reducing the number of poor people.

METHODOLOGY

The research approach used in this study is a quantitative approach with hypothesis testing and regression analysis tools. The quantitative approach simply refers to collecting data and analyzing statistical information using statistical tests. The data collected is quantitative so it can explain the relationship between variables that affect other variables (Gujarati & Potter, 2013). The data used in this study is secondary data obtained from previous studies. There are 41 Indonesian articles with case studies in Indonesia, both research at the national, provincial, and district/city levels with various types of data used (Nurdin & Hartati, 2019).

The reason for taking this sample is that there are many studies that discuss and analyze the influence of economic growth on poverty levels, but produce different conclusions. This causes the reality that no research is free from errors in

research, even though researchers have tried to minimize mistakes or errors. Meta-analysis is the right method to produce research that is systematic, comprehensive, broad, thorough, thorough and covers many things (Retnawati, H. et al, 2018).

In this case, the researcher collected various studies on the same topic, namely the relationship between economic growth and poverty levels, using a meta-analysis method which was processed using statistical tools, and interpreted from the regression results (Retnawati, H. et al, 2018). With the hope of producing objective research results between the studies studied, and being able to determine the bias of research publications regarding the relationship between economic growth and poverty levels.

This study used meta-analysis as a tool in data processing using STATA 15.0 software. Meta analysis is a form of quantitative research that uses numbers and statistical methods from several research results to organize, integrate and extract information from the data obtained. Meta analysis is used to analyze empirical research that has been carried out by previous researchers, which is the result of quantitative research that can be compared, for example means, correlation coefficients and odds ratios. The results of this research are used as material to calculate the effect size, which is used to compile aggregates. Meta-analysis was also used to examine comparable constructs and relationships. Apart from that, it is also used to test the influence of other factors (moderating variables) which can explain differences in research results in various similar studies, such as gender, year of research, research object, and differences in methods used (Rasyid, 2021).

Meta analysis is a form of research using data from other existing studies (secondary data). Therefore, meta-analysis is a quantitative research method by analyzing quantitative data from previous research

results to accept or reject the hypotheses proposed in these studies (Retnawati et al., 2018).

Meta analysis needs to be carried out because of the reality that no research is free from errors in research even though researchers have tried to minimize mistakes or errors in the research. For this reason, it is necessary to correct imperfections in research or what are called artifacts (Hunter & Schmidt, 2004). Meta analysis is used to analyze empirical research that has been carried out by previous researchers, quantitative research results, research results in a form that can be compared, for example means, correlation coefficients and odds ratios. The results of this research are used as material for calculating the effect size, which is used to compile aggregates. Meta-analysis was also used to examine comparable constructs and relationships. This meta-analysis is a special research method for combining studies whose effect size can be measured. Meta-analysis cannot be used to summarize theoretically presented papers, reviews of qualitative studies, and policy proposals. Meta analysis can only analyze quantitative research, namely research that uses quantitative measurements of a variable and reports descriptive or inferential statistics to explain the research results (Retnawati, H. et al, 2018). Research results that can be used in meta-analysis have characteristics such as, research results can be compared conceptually with similar constructs and relationships. Then, research results have statistically similar results, so it is not appropriate to combine studies with different research designs and research results even though the research topic is the same (Retnawati et al., 2018).

A regression model with cross-section data with as many as 41 observations. The basic equation model in a study is described as follows:

$$Y = \beta_0 + \beta_1 X + \varepsilon \quad (1)$$

where Y is dependent variable, X is independent variable, β_0 is parameter intercept or point of intersection of the vertical axis Y , β_1 is coefficient of slope (slope), ε is error component in the unit of observation.

In each study, one estimator value for β_1 symbolized by b . The basic concept of meta-analysis is to collect several studies on the relationship of X to Y , to obtain an estimator value for β_1 and several moderating variables as in the following equation:

$$B_p = +y_1Z_{1p} + y_2Z_{2p} + y_3Z_{3p} + y_4Z_{4p} + y_5Z_{5p} + y_6Z_{6p} + y_7Z_{7p} + \varepsilon_p \quad (2)$$

In equation (2), B_p is the dependent variable which is the regression coefficient value from several previous studies divided by the standard error. $Z_1, Z_2, Z_3, Z_4, Z_5, Z_6,$ and Z_7 , are moderating variables that explain variations in B_p coefficient values from previous studies, including the object of the research, the year of the research, the number of the observations, the characteristics of the researchers, the method used, and the standard of error. ε_p is the error component which is assumed to be normally distributed.

To test the existence of bias in publications, the meta analysis model equation (2) is expanded as follows:

$$B_p = \alpha + y_1Z_{1p} + y_2Z_{2p} + y_3Z_{3p} + y_4Z_{4p} + y_5Z_{5p} + y_6Z_{7p} + y_8Z_{9p} + \partial SE_p + \varepsilon_p \quad (3)$$

Equation (3) is basically the same as equation (2) with the addition of a precision measure represented by the Standard Error (SE) variable from each previous study. The standard error variable coefficient ∂ is used as an indicator of publication bias. If there is no publication bias the parameter estimates of the research results will vary randomly around the population. The occurrence of publication bias is caused by the tendency of small amounts of data to change the specifications in such

a way as to obtain significant estimates of regression results. Otherwise, the research results will not be statistically significant. Research with a large enough research sample tends to produce significant regression results, so researchers do not need to look for alternative specifications. In equation (3), if the value is equal to zero (not significant), then there is no publication bias.

Statistical Testing in Meta Analysis. Meta analysis needs to be carried out because of the reality that no research is free from errors in research even though researchers have tried to minimize mistakes or errors in the research. For this reason, it is necessary to correct imperfections in research or what are called artifacts (Schmidt, F. L., & Hunter, J. 2004).

Correlation Meta Analysis, According to Retnawati et al (2018) explained that other conditions that can be analyzed with meta analysis are research findings related to the relationship between two variables. To see the relationship between these two variables, in statistics it is done through correlation analysis. The measure of how strong the relationship between two variables is can be seen based on the correlation coefficient, generally symbolized by r . This r value lies in the range $0 - 1$, and can be positive (+) or negative (-). When the correlation between variables X and Y is positive, it can be interpreted that the higher the increase in variable X , the impact on the increase in variable Y (directly proportional). Meanwhile, when the correlation between variables X and Y is negative, it can be interpreted that an increase in variable X has an impact on a decrease in variable Y (inversely proportional).

Meta correlation statistical analysis consists of two main components, namely calculating *the effect size* and calculating *the summary effect* (determining the weighted average effect, determining the confidence interval, and testing sig-

nificance). Both of these are used to test hypotheses in correlation meta-analysis studies. Apart from *effect size* and *summary effect*, another analysis carried out was the heterogeneity test (in other literature it is also called the homogeneity test) which aims to test whether the effect size of each study used in the correlation meta-analysis is the same or different. This heterogeneity test is usually used when researchers use a random effect model, so it can also be called an assumption test in the random effects model (Rasyid, 2021).

Effect size can be obtained from standardizing the findings of various studies that can be directly compared. Standard indices that can be used as *effect sizes* are standardized mean difference, correlation coefficient, and *odds-ratio*, as long as they have the characteristics of being comparable between panels, showing the magnitude and direction of the relationship of interest, as well as an independent sample size.

Determining *the effect size* is not the end of the process. Data analysis, however, is the beginning of determining the analysis furthermore. By obtaining the effect size value, of course we have not found it any conclusion, in other words, the hypothesis that we want to test completely unanswered when we only find the effect size for each study. To test the hypothesis of a meta study analysis, There are at least three analysis processes that we will carry out, namely: (1) determine the weighted average effect; (2) determine the confidence interval, and (3) test significance. All three analyzes are in the meta analysis known as the summary effect. Summary effects usually use two analysis models, namely the fixed -effect model and the random -effect model. In fixed effects Our model assumes that all studies in the meta-analysis have the same effect size. In other words, all factors that influence the effect size are the same for all studies, so the true effect size is also the same for all studies. In fixed

effect The null hypothesis model tested is that there is a zero effect in each study. In contrast, in the random effects model, it is assumed that the true effect size varies from study to study.

Random effect model assumes that there is variation in the true effect in each study, namely by estimating the variation in the true effect size from all studies (symbolized by τ^2). τ^2 here is estimated because there is no information about the true size in the studies analyzed. This means that if the effect size is known from each study, you can immediately calculate the variance.

Creating a Forest Plot, in conducting meta analysis, to understand the summary effect size or also known as the effect size of the aggregation, a forest plot is created. Plots it consists of bars, and each bar is a confidence interval point estimate results from each study. Confidence interval This is determined by a certain level of significance used by the researcher. If you determine a significance level of 5%, then the confidence interval is presented is 95%. In this forest plot the effect size results are also presented aggregation results.

Testing Effect Size Heterogeneity, In the random effects model it is known that the actual effect size is different between one study and another. In To prove this difference, a test needs to be carried out heterogeneity. The heterogeneity test only applies to random effects models, whereas it does not apply to fixed effects models The heterogeneity test applies, because in the fixed effects model it is assumed that effect sizes between studies were the same. Null hypothesis (H0) in heterogeneity testing that is, the true effect size between studies is the same, whereas The alternative hypothesis (Ha) is the true effect size between studies is different. To test this hypothesis, there are three methods, namely using the value of Q , the value of τ^2 , and the value of I^2 .

Publication Bias Test, to measure

the impact or effect of publication bias, we need a model that will tell us the possibility of missing research. Commonly used models make the following assumptions: (a) research with a large sample size is more likely to be published, regardless of whether the results are statistically significant or not because it takes a long time and costs a lot; (b) research with a medium sample size has the potential to be lost, but because a medium sample size with a moderate effect size tends to be statistically significant, it is possible that only a few (not all) studies with a medium sample size will be lost; (c) research with a small sample size has a high possibility of being lost, because small sample sizes tend to be statistically significant if the effect size is classified as large, while small sample studies with effect sizes that are also classified as small or medium tend to be statistically insignificant and not published. In the publication bias test it can be explained through funnel plots and Rank correlation and regression method (Ngafiyah & Otok, 2014).

RESULTS AND DISCUSSION

Result of Regression Parameter Coefficient Value and Effect Size Heterogeneity Test Negative Relationship Impact of Economic Growth on Poverty Level, As explained in the previous section regarding the relationship between economic growth and poverty levels, it has a strong negative correlation. To reduce the economic backwardness of a country, it must increase its economic growth rate, to exceed the population growth rate in that country. In this way, the per capita income figure will increase, automatically increasing people's prosperity and ultimately reducing the number of poor people.

However, in various studies there are several different coefficient values, there is even a positive relationship between economic growth and poverty levels.

At this time, to determine the parameter value of the coefficient of the relationship between economic growth and poverty in a meta analysis using the metaan coefficient value of the standard error with ml forest. So that it can be seen the value of the overall effect which can be used as a reference for researchers in looking at the strength of the negative relationship between the two variables.

This study uses effect size with correlation, because the data used is data on the correlation coefficient of economic growth at poverty levels. Of the 41 empirical test results, there were 15 studies that had significant results and had a negative effect, while the rest had results that did not have a significant effect on economic growth at poverty levels. By using the metaan test of the coefficient value to the standard error with ml forest in the meta analysis, it is known that the overall effect value or the magnitude and direction of the relationship that must be achieved or is desirable is -0,170 percent effect size.

Once it is known that the average coefficient value of the relationship between economic growth and the poverty rate is -0,170 percent. The estimated population value explains, if economic growth increases by 1 percent, it will reduce the poverty rate by -0,170 percent. The negative relationship between economic growth and the poverty rate empirically shows that the coefficient value can be seen in 15 studies that have a negative and significant correlation.

After determining the effect size value on the relationship of economic growth to the poverty level, the next step is to determine the weighted average effect, determine the confidence interval, and test for significance. All three analyzes are in meta analysis known as the summary effect.

The Random Effect model assumes that there is a true effect diversity in each study, namely by estimating the variation of

the true effect size of all studies (symbolized by τ^2). τ^2 here is estimated because there is no information regarding the true size of the studies analyzed. That is, if the effect size is known from each study, it can immediately calculate the variance.

It is known that this study is a random effect model, as seen from the effect size values that differ from one study to another. In order to prove this difference, it is necessary to do a test heterogeneity. The heterogeneity test only applies to the random effects model, while not to the fixed effects model heterogeneity test applies, because in the fixed effects model it is assumed that effect sizes were the same between studies. To test the hypothesis there are three methods namely using value Q , value τ^2 , and value I^2 .

The heterogeneity test using the parameter Q , the p-value is less than the value α ($p < 0.05$), so H_0 is rejected. Thus it can be concluded that the effect size of each study used in the meta-analysis is different (heterogeneous).

Furthermore, the heterogeneity test using the τ^2 parameters are obtained by the value $\tau^2 > 0$, with a confidence interval at a significance level of 95%, so H_0 is rejected. Thus it can be concluded that the effect size of each study used in the meta-analysis is not the same (heterogeneous). Likewise, if tested using the parameter I^2 , that is, if the value I^2 is close to 100% and lies within the confidence interval, it can be concluded that the effect size between studies is heterogeneous.

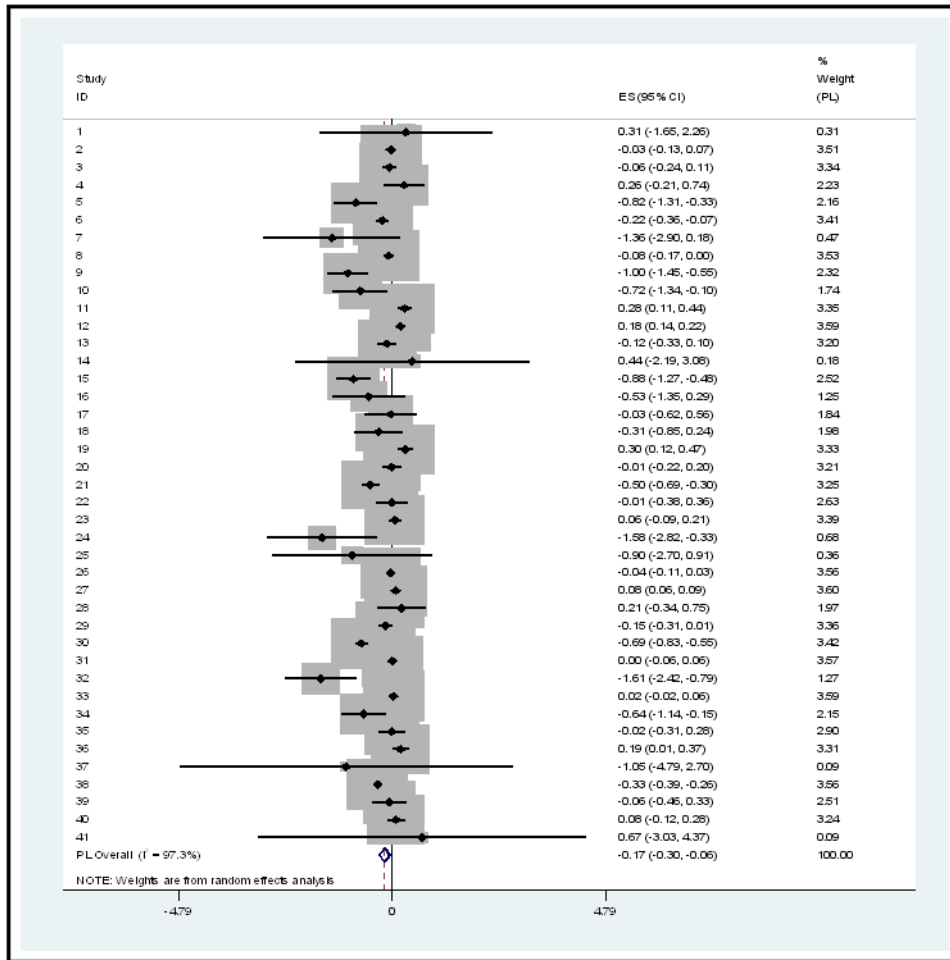
Thus, it can be concluded that this study which discusses the relationship of economic growth to the poverty rate is a random effect model with the assumption that there are a variety of true effects in each study.

In addition to determining heterogeneity, to understand the summary effect size of the aggregation, a forest plot is made in Figure 1. This plot consists of bars, and each bar is a confidence interval

for the point estimation results from each study. The significance level is 5% with the interval presented is 95% supplemented by the aggregation effect size. The left side is the lower limit, and the right side is the upper limit, and the middle part contains squares of different sizes whose area represents the amount of weighting which states the location of the effect size of each study. This can be seen in Figure 1.

If you pay attention to the forest plot in Figure 1, the position of the summary effect is less than 0, which means you must accept the null hypothesis (H_0). It can be interpreted that increased economic growth is not followed by reduced poverty, due to the income gap experienced by each research object studied. In addition, from 41 studies, only 15 studies had a confidence interval that limited each effect size indicating the accuracy of a study and statistically significant. This indicates that most of the effect sizes are not very consistent between one study and another, only 15 studies are statistically significant (26 other studies are not statistically significant).

Moderation Variable Regression Results That Have a Significant Influence on the Value of the Coefficient of Economic Growth Impacts on Poverty Levels, To achieve the purpose of meta-analysis, the researcher in this case used a data analysis tool in the form of meta-regression. This is employed to determine the effect of the moderating variable on the relationship between economic growth and poverty level through meta-analysis. In which the independent variables of the research object, the type of data used, the year of the study, the number of observations, the characteristics of the researcher, the method used, and the standard error affects the coefficient value of the relationship between economics growth and the poverty rate in each observation.



Source: Previous Research Data (processed by STATA 15.0)

Figure 1.

Fores Plot Based on Random-Effect Model

Table 1.
Meta Regression Relationship of Economic Growth to Poverty Levels

coefficient	exp (b)	std. Err.	t	p > t	[95% Conf. interval]
object	1.1299	0.0879	1.57	0.126	0.9647 1.3234
data	0.7099	0.0962	(-2.53)	0.016	0.5390 0.9352
year	1.0008	0.0202	0.04	0.968	0.9606 1.0427
observation	1.0037	0.0012	3.08	0.004	1.0013 1.0062
researcher	0.9306	0.0673	(-0.99)	0.327	0.8033 1.0780
method	1.1832	0.1659	1.20	0.238	0.8899 1.5734
_cons	0.2216	8.9965	(-0.04)	0.971	3.23E-37 1.52E+35

Source: Previous Research Data (processed STATA 15.0)

According to the table of meta-regression results, it can be seen that the regression function is as follows:

$$B_p = 0.2216 + 1.1299 y_1 Z_{1p} + 0.7099 y_2 Z_{2p} + 1.0008 y_3 Z_{3p} + 1.0037 y_4 Z_{4p} + 0.9306 y_5 Z_{5p} + 1.1832 y_6 Z_{6p} + \varepsilon_p$$

where B_p is coefficient value divided by the standard error, $y_1 Z_{1p}$ is research object, $y_2 Z_{2p}$ is data types, $y_3 Z_{3p}$ is research year, $y_4 Z_{4p}$ is observation or amount of data, $y_5 Z_{5p}$ is researcher characteristics (gender), $y_6 Z_{6p}$ is method used, $y_7 Z_{7p}$ is Size, with the formula $1/SE$ (standard error).

After getting the results of calculations carried out with STATA 15.0 software, the value of I squared res is 82.61 percent, which means that the research object variable, the type of data used, the year of research, the number of observations, the characteristics of the researcher, and the method used, affects the value of the correlation coefficient of economic growth. to the poverty rate in each observation of 83%. While the remaining 17% is explained by other variables that are not explained in this regression model. With an Adjusted R-squared value of 29.86 percent. This is in line with research conducted by (Hanifah, 2018) regarding "Economic Value of Mangroves: Meta-Analysis". no explanation as follows:

Fisrt, the research object variable does not affect the coefficient value of the relationship between economic growth and the level of poverty in each observation.

Second, the data type variable has a negative effect on the coefficient value of the relationship between economic growth and the level of poverty in each observation. If the amount of data used is more and more for each type of data with a level of 1%, then the coefficient value in each study is getting better or not subject to publication bias. The standard error value of the coefficient value is reduced by 0.71%.

Third, the variable year of research has no effect on the value of the correlation coefficient of economic growth at the level of poverty in each observation.

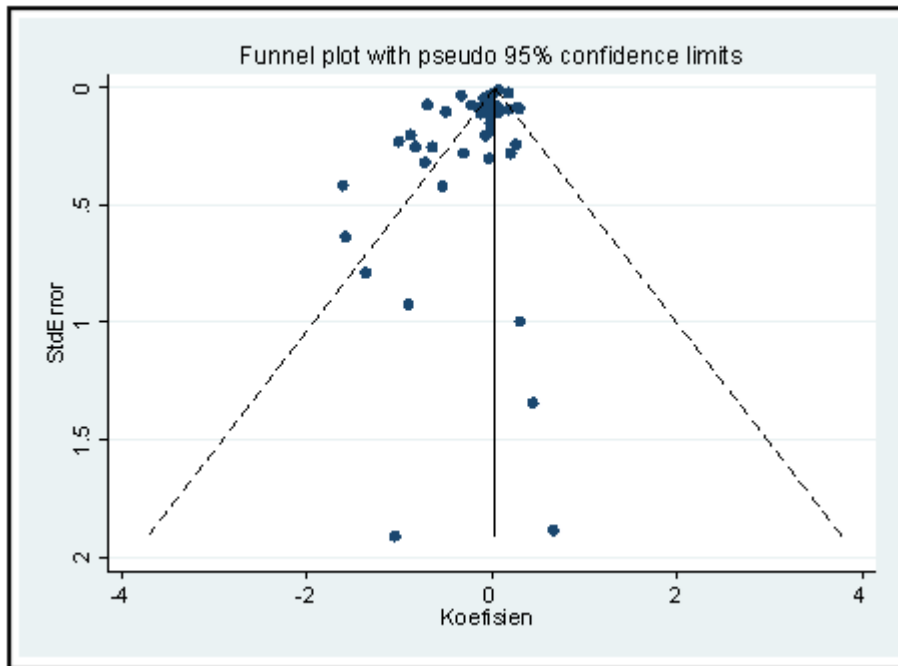
Fourt, the variable number of observations has a positive effect on the coefficient value of the relationship between economic growth and the level of poverty in each observation. If the number of observations increases by 1%, then the coefficient value in each study has a strong relationship and increases by 1%.

Fifth, variable characteristics of researchers have no effect on the value of the correlation coefficient of economic growth at the level of poverty in each observation.

Sixth, the variable method used does not affect the coefficient value of the relationship between economic growth and the poverty level in each observation.

Publication bias occurred due to the finding of the results of studies that accept the null hypothesis (no significant effect statistically) or negative (the effect is significant but in the opposite direction) contrary to theory construction in general or expected) but tends to be unpublished compared to research results that show a positive effect (the effect is significant and follows the general or expected theory construction). To measure the impact or effect of publication bias, using a meta funnel plot of the standard error coefficient as shown in Figure 2.

In the meta funnel image, the standard error coefficient showed the occurrence of publication bias. It can be seen from the research that the small sample size (located at the bottom) is not distributed symmetrically or asymmetrically. Then, when the standard error coefficient meta test was tested, it was found that the p-value $< 0.003 < 0.05$, the funnel plot formed from the Random effect model was to accept the null hypothesis in other words the funnel a plot is symmetrical (there is publication bias).



Source: Previous Research Data (processed STATA 15.0)

Figure 2.

Meta Funnel Standard Error Coefficient

Many studies have produced different analytical results regarding the relationship between economic growth and poverty levels. This leads to the reality that no research is free from errors in research, even though researchers have tried to minimize errors or errors. Several studies have followed the theory, which produces negative correlation results, some studies produce positive regression results and even insignificant regression results. The meta-analysis method is shown as the right method to produce research that is systematic, comprehensive, broad, thorough, thorough and includes many things from the aggregation of research on the relationship between economic growth and poverty levels (Prasetyoningrum, 2018).

The relationship between economic growth and poverty levels theoretically has a negative correlation. Where, in the early stages of the development process, the poverty rate tends to increase, and towards the final stages of development, the number of poor people gradually decreases.

Thus, economic growth has a negative impact on poverty (Ramdani, 2017).

However, empirically, of the 41 research articles that analyzed the influence of economic growth on poverty levels from 2009 to 2021, each study produced a different relationship. It is known that 15 studies provided significant results and had a negative effect. Then 4 studies provided significant results but had a positive effect, including research conducted by (Istiqamah et al., 2018), (J. Sari, 2019), (Safuridar, 2017), (Bintang & Woyanti, 2018), and (Mustamin, 2017) and the rest gave insignificant research results. 13 studies had an insignificant negative effect and 9 studies had an insignificant positive effect, including research conducted by (Novita Dwi Cahyanti Ignatia Martha Hendrati, 2020), (Ningsih & Andiny, 2018), (Prasetyoningrum, 2018), (Romi & Umiyati, 2018), (Lendentariang et al., 2019), (Mita & Usman, 2018), (Pratama, 2019) and (Munandar et al., 2014).

The diversity of research results in

each study indicates that not all research results are theoretically correct and statistically accepted. So it is necessary to determine the value of the overall effect or the value of the coefficient of the relationship between economic growth and poverty. By using the meta-test of the coefficient value against the standard error with ml forest in the meta-analysis, it is known that the

value of the overall effect or the magnitude of the direction of the relationship that must be achieved is -0.170 percent.

From the results of the meta-regression, it is known that the moderating variables that affect the coefficient value are the type of data that has a negative effect, and the number of observations has a positive effect. While the variables of

Table 2.
Research coefficient values that are significant and theoretically correct

Title / Research Object / Year / Researcher	Data Type	Coefficient Value	Research result
Analysis of the influence of economic growth on poverty levels in Sumatra Province (2010-2019). (Nainggolan, 2020)	Time series	-0.065 Significant and correct in theory	From the estimation results, it is known that economic growth has a negative and significant effect on poverty levels in Sumatra Province. If economic growth increases by 1 percent, the poverty rate in Indonesia will decrease by 0.065 percent.
The influence of economic growth, unemployment and education on poverty in East Java Province. (Cahyanti. et al., 2020)	Time series	-0.0822 Significant and correct in theory	From the estimation results it is known that economic growth has a negative and significant effect on poverty. If economic growth increases by 1 percent, poverty will decrease by 0.822 percent in East Java.
Analysis of the influence of economic growth on poverty at the provincial level in Indonesia. (Azhar, Y. et al., 2020)	Time series	-1,359 Significant and correct in theory	Economic growth influences the level of poverty in Indonesia. This means that economic growth has an increase of 1 percent, so the poverty rate decreases by 1.359 percent.
Analysis of the influence of inflation, economic growth and unemployment rates on poverty in Indonesia. (Windra et al., 2016)	Panel	-1.00247 Significant and correct in theory	Economic growth has a negative and significant effect on poverty in Indonesia with a significance of 0.015136. If economic growth increases by 1 percent, it will reduce poverty in Indonesia by 1.00247 percent.
The influence of economic growth, education and unemployment on poverty levels in Makassar City. (Ishak et al., 2020)	Time series	-0.71944 Significant and correct in theory	Economic growth has a negative and significant effect on poverty levels in the city of Makassar.
Factors that influence unemployment and poverty levels in Samarinda City. (Wijaya, A. et al., 2017)	Time series	-0.4954 Significant and correct in theory	It is known that economic growth has a negative and significant effect on the poverty level in Samarinda City.
The influence of fiscal decentralization and economic growth on poverty in Bali Province. 2013. (Sudewi & Wirathi, 2013)	panel	-0.897 Significant and correct in theory	Economic growth has a negative and significant effect on the poor population in Bali Province. If economic growth increases by 1 percent, it will reduce the number of poor people by 0.897 percent.
Analysis of the influence of investment and labor on poverty in East Java Province. 2017. (Prasetyawan et al., 2017)	Time series	-0.693 Significant and correct in theory	From the estimation results, it is known that economic growth has a negative and significant effect on the poverty level in East Java with a significance of 0.004 percent. If economic growth increases by 1 percent, poverty will decrease by 0.693 percent.
The influence of economic growth and unemployment on poverty in North Sumatra. 2019. (Aderma et al., 2019)	Time series	-1.60593 Significant and correct in theory	Economic growth has a negative and significant effect on poverty in North Sumatra with a significance of 0.0062 percent. if economic growth increases by 1 percent, it will reduce poverty by 1.60593 percent.
The influence of economic growth and minimum wage on unemployment and poverty levels in Bali Province. 2018. (Putra, DYKI & Yasa W M., 2018)	Panel	-0.642 Significant and correct in theory	Economic growth has a negative and significant influence on poverty in Bali with a significance of 0.000 percent. poverty fell by 0.642 percent.

The influence of economic growth, inflation and unemployment on poverty levels in South Sumatra. (Ratih Primandari, 2018)	Time series	-1.0452 Significant and correct in theory	Economic growth has a negative and significant effect on the poverty level in South Sumatra with a significance of 0.0172 percent. If economic growth increases by 1 percent, it will reduce the poverty level by 1.0452 percent.
Analysis of the influence of economic growth, labor and education on poverty in East Java Province in 2002-2007. (Azami, 2009)	Panel	-0.328253 Significant and correct in theory	Economic growth has a negative and significant effect on poverty in East Java with a significance of 0.0000 percent. This means that if economic growth increases by 1 percent, it will reduce poverty by 0.328253 percent.
The influence of GDP and population on poverty in Indonesia for the 1990-2008 period. (Mustika, 2011)	Time series	-0.065 Significant and correct in theory	From the estimation results, it is known that GDP or economic growth has a negative effect on poverty levels in Indonesia with a significance of 0.01 percent. If GDP or economic growth increases by 1 percent, the poverty rate will decrease by 0.0654 percent in Indonesia from the 1990 to 2011 period.
The influence of economic growth, education and unemployment on poverty in Jambi Province. (Y. Sari & Falianto, 2020)	Panel	-0.219 Significant and correct in theory	From the estimation results, it is known that economic growth has a negative and significant effect on poverty with a significance of 0.012 percent. If economic growth increases by 1 percent, it will reduce poverty by 0.219 percent.
The influence of economic growth, human development index and direct expenditure on district/city poverty in Jambi Province. (Amali, 2017)	Panel	-2.267347 Significant and correct in theory	Economic growth has a negative and significant effect on poverty in Jambi Province with a significance of 0.0288 percent. If economic growth increases by 1 percent, it will reduce poverty in districts/cities in Jambi Province by 2.267347 percent.

Source: Previous Research Data

the research object, the year of research, the characteristics of the method used have no significant effect on the value of the coefficient of the relationship between economic growth and the level of poverty researchers in each observation. However, simultaneously (simultaneously) has a significant effect on the coefficient value of the relationship between economic growth and poverty levels.

The different research results are influenced by the type of data and number of observations. In terms of data type, if the data used is panel, it produces a stronger negative relationship than using cross section data. This can be proven from 15 studies that have a significant effect using panel and time series data types, which have dominant negative coefficient values in table 2.

Table 2 shows 15 significant studies regarding the relationship between economic growth and poverty levels. The coefficient value in accordance with this theory is influenced by a significance level that is smaller than 0.05 percent, resulting in a coefficient value above the average

of -0.170 percent. can be seen from the results of research conducted by (Amali, 2017) regarding "The influence of economic growth, human development index and direct spending on district/city poverty in Jambi Province", has a coefficient value of -2.267347 percent with a significance of 0.0288 percent . Then research conducted by (Windra et al., 2016) , et al regarding "Analysis of the influence of inflation, economic growth and unemployment rates on poverty in Indonesia", had a coefficient value of -1.00247 percent with a significance of 0.015136 percent. In addition, research conducted by (Prasetyawan et al., 2017) regarding "Analysis of the influence of investment and labor on poverty in East Java Province. 2017", with a coefficient value of -0.693 percent at a significance of 0.004 percent.

From table 2, it can be seen that of the 15 studies that are significant in accordance with the theory of the relationship between economic growth and poverty, it is dominated by research that uses time series data and panel data. This is because these two types of data are more often

used by researchers who aim to find out the implications of macro policies implemented by the government, whether the policies implemented are on target or not. One of them concerns policies to increase economic growth and improve community welfare.

Meanwhile, research that uses cross section data tends to produce coefficient values that are positively related. Such as research conducted by (Fadly et al., 2021) regarding "Sharia bank financing, government spending and economic growth on poverty levels in Ternate City." in 2021. Although theoretically economic growth will create new jobs which will have an impact on reducing poverty. Empirically, in Ternate City, economic growth does not provide direct benefits in reducing poverty, in fact the poverty level is increasing. Apart from that, similar things were also found in research conducted by (Pratama, 2019) regarding "Analysis of factors influencing poverty in Indonesia" in 2014 showing that the per capita income variable had a positive and insignificant effect on the level of poverty in Indonesia.

In the variable number of observations, the greater the number of observations (N) used tends to produce positive coefficient values, research that produces negative coefficient values occurs in certain cases regarding the relationship between economic growth and poverty levels.

Research that has a fairly large number of observations with positive coefficient values can be seen in several studies, both significant and insignificant, including: research conducted by (Bintang & Woyanti, 2018) regarding the influence of GRDP, education, health and unemployment on poverty levels in Central Java (2011-2015), using panel data with a total of 175 observations. It is known that GRDP has a positive effect on poverty levels in 35 regencies/cities in Central Java Province. These results indicate that economic

growth is uneven and dominated by contributions from high-income groups. Economic growth that is not accompanied by equality will result in economic inequality in a region. Apart from that, it can also be seen in research conducted by (Istiqamah et al., 2018) regarding the influence of economic growth on income inequality and poverty (study of provinces in Indonesia), using panel data with a total of 238 observations. has a significant positive effect on income inequality and the number of poor people in Indonesia's provinces. This means that economic growth cannot reduce income inequality or reduce the number of poor people. Government policies are needed so that economic growth can continue to increase and can be felt by every citizen, through infrastructure development policies and formulating and implementing economic planning. Apart from that, it is necessary to increase the implementation of progressive taxes and provide assistance to lower class people so that the difference in income between the upper middle class and the lower middle class does not become further. Increasing community access to education and health is also very necessary to improve the quality of human resources.

Meanwhile, research that has a negative coefficient value with a very large number of observations produces insignificant results. One of them is research conducted (Zuhdiyaty & Kaluge, 2018) regarding the analysis of factors influencing poverty in Indonesia over the last five years (case studies in 33 provinces), with a total of 165 observations. Partially, economic growth has no effect on poverty, This is because the existing growth is of poor quality so that it does not affect poverty.

Judging from the results of the meta funnel test, the standard error coefficient and the comparison of the p-value $< \alpha$ or $0.003 < 0.05$ then the funnel plot formed from the Random effect model is accepting the null hypothesis or in other words the

funnel plot a is symmetrical (publication bias occurs). In the 41 research articles analyzed there was publication bias, this was caused by research regarding the relationship between economic growth and poverty levels in Indonesia which was published or submitted to journals, only research that was significant. Meanwhile, research that has insignificant analysis results tends not to be published. Whether the results of a study are significant or not should still be published to avoid publication bias.

Publication bias occurs as a result of research that has results that are inversely proportional to the theory of the relationship between economic growth and poverty levels which is negatively related. There are 4 studies that have a negative relationship and have a significant influence, such as: Research conducted by (Ishak et al., 2020) regarding "The influence of economic growth, education and unemployment on poverty levels in Makassar City". Using time series data type. It is known that the economic growth variable has a positive and significant effect on the poverty level. In other words, the relationship between economic growth and poverty has a unidirectional relationship. This happened because of the results of economic activities in Makassar City. Even though there is a level of economic growth, it is not distributed evenly because the strategy still focuses on the aspect of accelerating economic growth, but tends to ignore aspects of equality and is still dominated by high incomes by high-level groups of society, resulting in inequality and income gaps between the people. Then research on "The influence of GRDP, education, health and unemployment on poverty levels in Central Java (2011-2015)", was carried out by (Bintang & Woyanti, 2018), using panel data with a total of 175 observations. It is known that GRDP has an effect positive impact on poverty levels in 35 regencies/cities in Central Java Province. These results indicate that economic growth is un-

even and dominated by contributions from high-income groups. Economic growth that is not accompanied by equality will result in economic inequality in a region.

Apart from that, "Analysis of the influence of sharia bank financing, government spending and economic growth on poverty levels in Ternate City", carried out by (Fadly et al., 2021). Although theoretically economic growth will create new jobs which will have an impact on reducing poverty. Empirically, in Ternate City, economic growth does not provide direct benefits in reducing poverty, in fact the poverty level is increasing.

Similarly, research conducted by (Istiqamah et al., 2018) regarding "The influence of economic growth on income inequality and poverty (study of provinces in Indonesia)", uses panel data with a total of 238 observations. Economic growth has a significant positive effect on income inequality and the number of poor people in Indonesia's provinces. This means that economic growth cannot reduce income inequality or reduce the number of poor people.

Government policies are needed so that economic growth can continue to increase and can be felt by every citizen, through infrastructure development policies and formulating and implementing economic planning. Apart from that, it is necessary to increase the implementation of progressive taxes and provide assistance to lower class people so that the difference in income between the upper middle class and the lower middle class does not become further. Increasing public access to education and health is also very necessary to improve quality.

CONCLUSIONS

Based on the results of the analysis and discussion of the impact of economic growth on poverty levels using the meta-analysis method, in theory it is stated that economic growth has a negative effect on

poverty levels. Empirically, from the 41 articles analyzed using the meta-analysis method, it was stated that not all research objects, whether national, provincial or district/city, were negatively related.

After the regression was carried out on the moderating variables of the research object, the type of data used, the year of research, the number of observations, and the researcher's characteristics (gender), as well as the method on the coefficient value of the relationship between economic growth and poverty level, which had a significant effect on the coefficient value, only the type of data and number of observations. In terms of data type, if the data used is in panel form, it produces a stronger negative relationship compared to using time series or cross section data types. Regarding the number of observations, the greater the number of observations (N) used tends to produce positive coefficient values, research that produces negative coefficient values occurs in certain cases.

Of the 41 research articles analyzed, there was publication bias, this was because only significant research was published, while research that was not significant tended not to be published. It should all be published to avoid publication bias. Based on the results of the analysis, the suggestions that can be recommended in this research are as follows:

1. The policies that must be implemented by the government regarding increasing economic growth at both the national and regional levels are expected to increase the rate of economic growth beyond the rate of population growth. Thus, per capita income will increase ultimately reducing the number of poor people.
2. For further research regarding the analysis of the relationship between economic growth and poverty levels, the various methods used will focus more on selecting the type of data and the number of observations used. This is because the moderat-

ing variables that have a significant effect on the coefficient value are only the type of data and the number of observations.

3. The meta-analysis in this study has publication bias, this is due to the use of an aggregation of only significant studies. For future research, it is recommended to use significant and non-significant research results to avoid publication bias.

From the research results produced in this study, it means that every time an increase in economic growth in each region increases by one percent, it will reduce the poverty rate by -0.170 percent. The limitations of the research in this study are that the articles used were only articles from Indonesian journals and the number of observations was only 41 articles.

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