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THE IMPACT OF ECONOMIC GROWTH ON INVESTMENT LEVELS IN INDONESIA A META-REGRESSION ANALYSIS

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ABSTRACT

This study was conducted to analyze the relationship between economic growth and investment levels in Indonesia using meta-regression. This study uses 18 studies published in the period 2016 - 2025. The data used is the value of the GDP coefficient at the investment level in Indonesia to be calculated as effect size and analyzed using the Random Effects Model through the STATA 17 software. The results showed that the effect size reached 0.070 with a 95% confidence interval (-0.054 to 0.194). This shows that economic growth has a positive impact on the level of investment in Indonesia, but it is not statistically significant. The meta-regression results showed that moderation variables such as year, method, gender, and number of observations had a significant influence on effect size. In addition, the publication bias test using the Egger method showed that there was an indication of publication bias, where the probability value obtained was 0.0001 ($p < 0.05$). Overall, the results of this study show that economic growth contributes positively to increased investment in Indonesia, although this relationship is not always consistent in every study analyzed.

INTRODUCTION

Economic growth is the main indicator in measuring the success rate of the economy. As in Indonesia, economic growth is the main focus in the strategy to create community welfare. The increase in economic growth is characterized by an increase in the amount of output of both goods and services as measured through Gross Domestic Product (GDP). In the context of national development, economic growth does not only function as a measure of a country's economic performance but also as a means to improve people's welfare (Baskara, 2018).

In the process of economic development, Indonesia still has limited sources of domestic financing to finance development activities. According to data from the Central Statistics Agency (BPS) in 2025, the

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realization of investment in Indonesia will reach the target of Rp. 1,931.2 trillion or equivalent to 101.3 percent of the country's annual target and economic growth in Indonesia will reach 5.03 percent based on real GDP. This shows that economic growth and investment levels in Indonesia are experiencing positive developments. However, these two indicators do not always show a consistent relationship.

The relationship between economic growth and investment has a two-way relationship. Economic growth can increase people's income, purchasing power, and increase the amount of market demand, so investors will make a profit. On the other hand, investment also plays a role in increasing economic growth through increasing capital accumulation, production capacity, and increasing labor absorption. Both show a simultaneous relationship in the economic system.

This concept of simultaneous relations is in line with the neoclassical theory of economic growth developed by *Robert Solow*, he said that economic growth is determined by the accumulation of capital, labor, technological progress and innovation. In view *Robert Solow* This means that investment plays a role in increasing capital stock so that the level of labor productivity will increase and will boost total output. Then when a country's economic growth increases, this shows positive conditions to create better business opportunities and increase investor interest and confidence to invest their capital (Ariyadi et al., 2024).

In theory *Harrod Domar* and *ML Jhingan* (2014) by (Jannah et al., 2024) states that there is a positive relationship between investment and economic growth, where it is said that the size and low level of investment of a country can affect economic growth and per capita income in the region. Then, to achieve high economic growth, a source of income used to finance state development is needed, namely investment. So it can be concluded that economic growth and investment cannot be separated from each other. In addition, *Harrod Domar* also said that this investment plays a role in increasing the economic growth of a country. The easier the process of implementing investment in a country, the higher the state revenue. Investment plays a role in encouraging production activities so that there will be an increase in capital stock. The higher the capital stock, the higher the amount of market demand (Nurul Ain, 2021).

Several empirical studies show mixed research results on the relationship between economic growth and investment. The results show that research that has a positive and significant relationship such as the study conducted by Herry and Dewi in their research reveals that Gross Domestic Product (GDP) has a positive and significant impact on foreign investment in Indonesia (Prabowo, 2021). In the next study, the results showed that Foreign Direct Investment (FDI) had a positive and significant impact on economic growth in Indonesia. The findings of the study explain that foreign direct investment can increase Gross Domestic Product (GDP) through increased capital, technology transfer, operational efficiency, and the competitiveness of local companies (Rauf, 2024).

Then there are studies that have negative and insignificant results like in the study (Asrinda & Setiawati, 2022) which states the results that FDI investment has a significant positive effect on economic growth as measured through GDP. On the other hand, PMDN does not have a significant effect on economic growth. So it can be concluded that the high amount of investment in Indonesia has not been fully able to encourage an optimal increase in GDP. In addition, in other studies, FDI investment did not have a significant effect on economic growth (GDP in the period 2011-2020. This is influenced by other factors such as global economic conditions, and economic instability (Ganar et al., 2021). This phenomenon shows that economic growth is not the only factor in determining the amount of investment in Indonesia.

About Keynesian theory, introduced by *John Maynard Keynes* in 1936 in his famous book "*General Theories of Work, Interest, and Money*"It is explained that the economy does not always reach

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equilibrium. *Keynes* argue that changes in aggregate demand can result in instability in the economy, such as unemployment and prolonged recessions. In addition, the decision to invest is also influenced by a country's interest rate, so economic growth alone is not enough to significantly boost the number of investors in Indonesia (Meiriza et al., 2024).

The difference in results in each study shows variations in findings between studies. This variation illustrates that the relationship between the variables studied does not always provide the same direction and impact in every study. In other words, the occurrence of this heterogeneity can be influenced by several other variables such as gender, year of study, research object, and method can result in variations in the results obtained (Rasyid, 2021).

The inconsistency of the empirical results encourages more systematic research using the meta-analysis method. This method was chosen because it can combine the results of previous research that has been conducted quantitatively, resulting in more objective, precise, and comprehensive conclusions. This meta-analysis is a form of research to indicate differences in results between studies, measure the degree of variation between studies, and recognize the presence of publication bias in research (Hidayat, 2021). Meta regression can also be interpreted as a method of collecting data from several diverse study results and combining and comparing them so that stronger results are obtained (Sumpa & Winanto, 2022).

The researcher collected several studies on topics that discussed the relationship between economic growth and investment levels in Indonesia, then combined them with more comprehensive moderator variables such as year, method, gender, data type, and research object. This study uses the meta-regression method, and processed using the statistical tool STATA 17 software. The researcher hopes that this research can produce objective research results between the studies studied, determine the level of heterogeneity between studies, and can indicate the bias of research publications. Based on the above presentation, this study is here to formulate a research with the title *" Impact of Economic Growth on Investment Levels in Indonesia: Meta" Regression Study*.

METHODS

This study uses a quantitative approach using secondary data of 18 articles with cases in Indonesia obtained from previous research. Sampling was carried out because there are many studies that discuss the relationship between economic growth and investment with different results for each study.

In this case, the researcher collected articles from previous research with the same topic, namely the relationship between economic growth and investment in Indonesia, then processed using statistical tools using the meta method and the results obtained will be presented (Aids & Nusrang, 2019). The results of the study will be used as material to determine the size of the effect. Meta-regression was performed to determine the relationship between the variables of each study. In addition, meta can also be used to test the influence of moderation variables that explain differences in research results in the same study, such as year of study, gender, research object, and method used in the study (Rasyid, 2021). Then in this study, meta analysis was also used as a follow-up analysis. Meta analysis is an analysis technique by combining 2 or more studies to assess effect size (Sanuaka et al., 2022). In addition, this meta-analysis is also used to obtain conclusions from several existing studies that are more comprehensive (Wahidah & Idrus, 2022).

$$Y = \beta 0 + \beta_{1X1+} \beta_{2X2+} \beta_{3X3+} \ldots\ldots + \varepsilon\_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Description :

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Y : Effect size of economic growth on investment level
B0 : Constant
y1X1 : Research year
y2X2 : Method
y3X3 : Data Type
y4X4 : Gender Researcher
y5X5 : Number of Observations
EP : Error term

- Data Collection Methods

Data was obtained from the value of the GDP coefficient to the level of investment in Indonesia which was processed to obtain effect size, *error standard*, year of researcher, method used, type of data, gender of researcher, and number of observations. The data used in this study is cross *section data*. Data were obtained from previous research that discussed the relationship between economic growth and investment levels in Indonesia to determine variables in regression analysis.

Data Criteria :

1. The study discusses "Economic Growth to Investment Levels in Indonesia"
2. Research in Indonesia
3. The study used quantitative data using regression analysis
4. The research provides information to calculate *effect size*

- Operational Definition

a. Dependent Variable

Dependent variables are variables that are influenced by other variables in a study. In this study, the *effect size* of the value of the GDP coefficient on the level of investment in Indonesia is used as an independent variable.

b. Independent Variables

1. Standard Error:

Standard Error is a measure of error obtained from the relationship between economic development and poverty rates.

2. Research Year :

A research year is a year in which a previous article or research was published by a journal.

3. Method :

The method here is the type of method used in previous research. So the researcher used a dummy variable, where 0 was used for the non-Ordinary *Least Square* (OLS) method, and 1 was used for the *Ordinary Least Square* (OLS) method.

4. Data Type :

The type of data is the data used in the research in the form of quantitative regression. The types of data used in previous research include *panel* data, *cross section* data, *time series* data. With this, the researcher uses dummy variables, where 1 is used for *panel* data, 2 is used for *cross section* data, and 3 is used for *time series data.*

5. Gender Researcher :

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The gender of the researcher or the gender of this researcher is used to find out who the author of the scientific paper is. With this, the researcher uses a dummy variable, where 1 is used for male researchers, 2 is used for female researchers, and 3 is used for mixed researchers (male and female).

6. Number of Observations :
   The number of observations is the number of studies used in previous studies.

c. Data Analysis Techniques
This study uses meta-regression and uses STATA 17 software in processing the data. Meta regression is a form of quantitative research that uses data in the form of numbers and uses statistical methods to organize and analyze information from data.

RESULTS AND DISCUSSION

Regression and Heterogeneity

Regression Results of Coefficient Value Parameters and Effect Size Heterogeneity Test

In various existing studies, there are several differences in the value of the coefficient in each study. The difference in the value of the coefficient of each study is the encouragement for new research to be carried out with the aim of determining the value parameters of the economic growth coefficient relationship with the level of investment in Indonesia using meta. This study uses the value of GDP efficiency on the level of investment obtained from each study. In table 4.2 with a meta-test, it is known that the average effect *size* value is 0.070 with a confidence interval of 95% between -0.054 and 0.194. The lower and upper limits of the confidence interval include zero, so the effect of economic growth on investment levels in Indonesia is not statistically significant at a significance level of 5 percent.

This value shows that in aggregate, economic growth has not shown a significant influence on the level of investment in Indonesia. Thus, although the results of individual studies show variations, the overall meta-analysis confirms that economic growth and investment levels in Indonesia tend to be positive but relatively weak. Interpretively, the *effect size* value of 0.070 can be interpreted as a very weak relationship. This indicates that an increase in economic growth is not always directly accompanied by an increase in investment. GDP is not the only variable that affects the level of investment, as there are various other factors.

Table 4.1
Profile of Possible Methods Chosen in Determining Effect Size

Learn	Effect Size (r)	Lower CI 95%	CI Above 95%	Weight (%)	Author
1	0	0	0	12.68	(Anisa et al., 2023)
2	0.288	-0.209	0.786	0.17	(Vebriadi, 2018)
3	4.778	-4.614	14.171	0.02	(Baskara, 2018)
4	0.001	0.001	0.001	12.68	(Budiman et al., 2025)
5	6.456	-5.303	18.216	0.01	(Ramadan, 2023)
6	5.568	-5.886	17.022	0.01	(Nisa, 2023)
7	0.428	0.172	0.685	8.21	(Mukhtar, 2018)

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8	6.093	-6.577	18.762	0.01	(Wijaya et al., 2020)
9	6.245	-6.282	18.772	0.01	(Sebastian et al., 2024)
10	0.006	0.002	0.011	12.68	(Najmuddin et al., 2023)
11	6.305	-3.533	16.144	0.02	(Pratama et al., 2025)
12	0.358	0.274	0.442	11.98	(Anwar et al., 2023)
13	6.981	-7.728	21.690	0.01	(Agustya, 2016)
14	-0.071	-0.105	-0.037	12.56	(Sari & Hasmarini, 2023)
15	6.469	-5.297	18.234	0.01	(Zainul & Faizin, 2023)
16	0.004	-0.014	0.023	12.64	(Budiman et al., 2025)
17	6.949	-5.485	19.382	0.01	(Sahara, 2024)
18	-0.158	-0.22	-0.096	12.29	(Nurdien, 2024)
Theta	0.070	-0.054	0.194	100%	

Source : Past Research Data (processed by STATA 17.0)

Table 4.2

Effect Size *Heterogeneity Test Results*

Learn	Q Cochran	df	p-value	I^2 (%)	t^2	H^2	Models
18 Learning	160.67	17	0.000	100.00	14E+05	9.45	REML (Random Effects)

Source : Past Research Data (processed by STATA 17.0)

The heterogeneity test using the Q parameter is known in table 4.3 with *a p-value* of less than α ($p < 0.05$), and H0 is rejected so that it can be concluded that the *effect size* of each study used in the meta-analysis is different (heterogeneous). In the heterogeneity test using the τ 2 parameter , a value of 14e+05 was obtained with a confidence interval at a significance level of 95% which indicates that there is a large variance. This shows that the variance *effect size* is not only influenced by sampling errors, but can be influenced by differences and characteristics between studies.

Furthermore, the hetrogenicity test using parameter I^2 obtained a value of I^2 of 100%, so it can be concluded that the *effect size* between heterogeneous studies is very high. Finally, an H^2 value of 9.45 was obtained, which shows that the variation in total *effect size* was 9.45 times greater than the variation caused by sampling errors. Based on all these indicators, it can be concluded that this study meets the criteria for using the Random Effects Model (REML). This model was chosen because it takes into account the significant variation between studies and to understand *the summary effect size*.

Figure 4.1 shows a plot consisting of bars which is the confidence interval of point estimation results from each study that is used to understand the summary effect size of the aggregation in addition to determining heterogeneity. The significance level is 5%, and the interval presented is 95%. In addition, the center is made up of different sized squares that show the magnitude of the weighting, which shows where the size effect of each study lies. The left side is the lower limit and the right side is the upper boundary.

Front Plot

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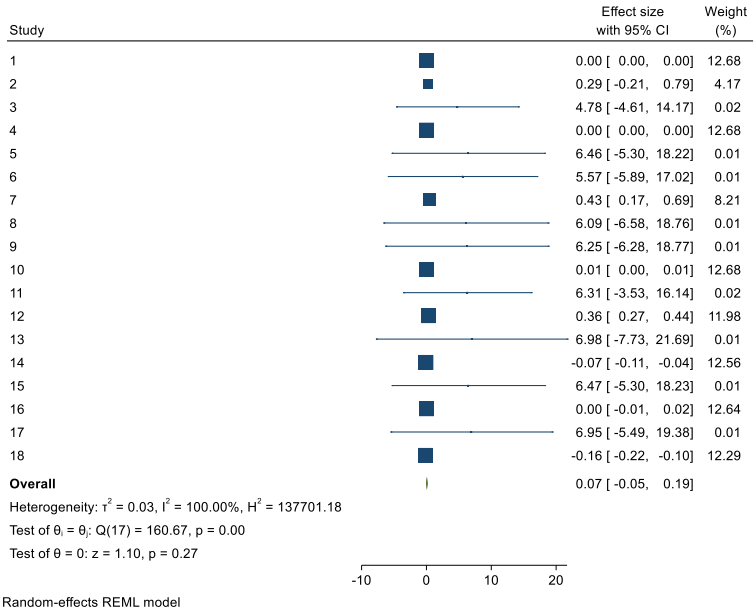
Figure 4.1
Fores Plots Based on Random-Effect Model



Source : Past Research Data (processed by STATA 17.0)

Based on the *forest plot* in Figure 4.1, it can be seen that the position *of the summary effect* (*overall effect*) is on the right side of the zero line, with *an effect size* of 0.070 and a 95% confidence interval in the range of -0.054 and 0.194. In aggregate, the zero (H0) hypothesis is not rejected, so it can be concluded that economic growth to the level of investment in Indonesia is not statistically significant at a significance level of 5 percent.

This condition indicates that increased economic growth is not always accompanied by increased investment**.** However, the value *of the effect size* is relatively low to moderate, so economic growth is not the only factor affecting the increase in investment.

Some studies have a fairly wide range of beliefs, which indicates that there is variation in research results between different studies. These findings are also supported by a very high heterogeneity value (I^2 = 100%), which indicates that the differences in results are influenced by variations in both the analysis method, the type of data, the year of the study, the gender of the researcher and the number of observations used in each study.

Studies that have a 95% confidence interval that do not cross the zero line show statistical significance. The inconsistency in the direction and magnitude of *the effect size* between these studies reflects a very high heterogeneity, which is reinforced by the I^2 value of 100%, so the use of *the random effect model* in this meta-analysis is considered appropriate to accommodate the variation in characteristics between studies.

Furthermore, a regression meta-test was carried out to determine the influence of economic growth moderation variables on investment levels in Indonesia through meta-analysis. The variables used as moderation variables consisted of *error standards*, methods, years, data types, gender, and the number of observations on the variation in *the effect size* of the relationship between economic growth and investment

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levels in Indonesia. The results of the calculation after being processed using stata 17 software, then the regression results are analyzed and can be seen in table 4.3 below.

Regression Goals

Table 4.3
Meta-Regression of Economic Growth Relations
On Investment Levels in Indonesia

Effect size label: Effect size
Effect size: effect
Std. err.: se
Random-effect meta-regression *Number of obs = 18*
Method: REML *Residual heterogeneity:*
number2 = .003057
I2 (%) = 44.27
H2 = 1.79
R-squared (%) = 90.32
Chi2 forest(5) = 41.44
Prob > chi2 = 0.0000

_meta_es	***Shared efficiency***	***Std. err.***	***z***	***P>|z|***	***[95% conflict. interval]***	
Year	*-.0551442*	*.0178597*	*-3.09*	*0.002*	*-.0901485*	*-.0201398*
Method	*-.3133576*	*.070009*	*-4.48*	*0.000*	*-.4505727*	*-.1761425*
Data Type	*.161605*	*.0995363*	*1.62*	*0.104*	*-.0334826*	*.3566926*
Gender	*.1641236*	*.0445422*	*3.68*	*0.000*	*.0768225*	*.2514248*
Number of Obs	*.0064532*	*.0017884*	*3.61*	*0.000*	*.002948*	*.0099584*
_cons	*110.7133*	*36.13713*	*3.06*	*0.002*	*39.88579*	*181.5407*

Residual homogeneity test: Q_res = chi2(12) = 24.42 Prob > Q_res = 0.0178

Source : Past Research Data (processed by STATA 17.0)

From the table of regression meta-results, the regression function can be seen as follows:

$Y = \beta 0 + \beta_{1X1+} \beta_{2X2+} \beta_{3X3+} ..... + \varepsilon\_i$ ..... (4.1)

Venue :

Y : Effect size of economic growth on investment level
B0 : Constant
y1X1 : Research year
y2X2 : Method
y3X3 : Data Type
y4X4 : Gender Researcher
y5X5 : Number of Observations
EP : Error term

Based on the results of the meta-regression, a residual I *squared value* of 44.27% was obtained, which showed that the *standard variables of error*, method, year, data type, gender, and number of observations

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did not have a significant effect on effect size variations. The *value of I square* was obtained at 90.32 % which indicates that most of the variation in *effect size* can be explained.

1. Year
   The variable year of the study has a significant effect on the value of the coefficient of the relationship between economic growth and investment level in Indonesia. This is indicated by a probability value of 0.002, with a significance level of 5%. Then the value of the variable coefficient was obtained with a value of -0.0551442, this shows that the newer the research year, the smaller the *effect size value* produced. Thus, the difference in the time period of the study caused a significant change in the magnitude of the coefficients between studies.
2. Method
   The method variable had a significant effect, with a probability value of 0.000 with a significance level of 5%. The value of the coefficient was obtained with a value of -0.313576, this finding shows that the difference in estimation methods used in previous studies has a significant influence on the value of the coefficient of the relationship between economic growth and investment in Indonesia. A negative sign indicates that there is a method that produces *a lower effect size* value than the comparison method.
3. Data Type
   The data type variable has a positive coefficient of 0.161605 but not statistically significant with a probability value of 0.104 with a significance level of 5%. Thus, the use of different types of data (*panel, cross-section,* and *time series*) does not cause significant differences in the magnitude of the influence of economic growth on investment in Indonesia.
4. Gender (researcher character)
   The gender variable shows a positive coefficient of *0.1641236* with a probability value of 0.000 with a significance level of 5%. This shows that the grouping of research based on gender aspects has a statistically significant effect on the variation in the value of the coefficient of the relationship between economic growth and investment in Indonesia.
5. Number of Observations
   The variable number of observations has a positive coefficient of *.0064532* statistically with a probability value of 0.000. This shows that the observations used in a study significantly strengthen the relationship between economic growth and the level of investment in Indonesia produced.

Findings from the meta-regression results showed that moderator factors such as the year of the study, method, gender and the number of observations of the researcher influenced the variation in the value of the coefficient between studies, while the type of data did not have a significant impact. In addition, the remaining high residual I^2 value indicates the presence of additional factors outside the model that affect the variation in effect size. Thus, the relationship between economic growth and investment in Indonesia is not only influenced by economic growth itself, but also by other factors such as macroeconomic stability, investment policies, market conditions, and regulatory certainty that supports the investment environment.

Publication bias occurs due to the findings of research results that receive H0 or the absence of statistically significant or significant effects but have the opposite direction to the theory. To measure the effects of publication bias, a model is needed that can explain the likelihood of missing research. If the publication of the bias is unknown, then the research will be distributed symmetrically related to *the summary effect*, because sampling *errors* are random. This is on the other hand, if the results show that

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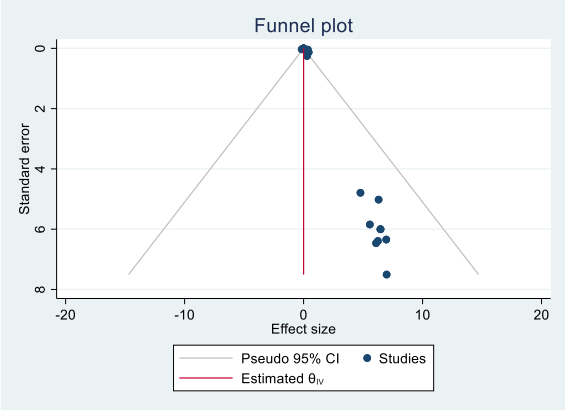
there is a bias, the research will be symmetrical at the top, some studies will be lost in the middle, and more will be lost at the bottom. If the direction of the effect is right, then there is *a gap* at the bottom on the left, then it shows that studies with small sample sizes that are not statistically significant will be lost or not published.

Meta Funnel

Figure 4.2
Meta Funnel Coefficient Standard Errors



Source : Past Research Data (processed by STATA 17.0)

Figure 4.2 shows the plot funnel used to identify possible publication bias or the effects of small studies in meta-analysis. This plot funnel depicts the spread *effect size* with *the standard error* of each study. From the funnel plot analysis, the spread of the study points looks not entirely symmetrical around the total *effect size* line . Most of the study points tend to be located on the right side of the graph, which indicates an imbalance in the distribution of effect sizes between studies.

In addition, the fairly diverse distribution of points also shows that there is a significant variation in research results between studies, which is in line with the results of the heterogeneity test in the meta-analysis which shows a very high I^2 value. This indicates that differences in study characteristics, such as analysis methods, data type, and research periods, can affect the variation in effect sizes obtained in each study.

This finding is supported by the results of the Egger test which shows a prob value of 0.0001 ($P < 0.05$), so that H0 is rejected and there is an indication of publication bias in the analysis. Therefore, the results of the meta can be considered quite strong and not affected by the tendency of publications that only highlight significant studies. This condition shows a high heterogeneity between studies, supported by the magnitude of I2 in the *results of meta-regress.*

Test Eggs

Table 4.5
Error Std Meta Bias Coefficient, Egger
Effect size label: Effect size
Effect size: effect
Std. err.: se

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Regression-based Egger test for small study effects
Random effects model
Method: REML

H0 : beta1	= 0; No small study effects
Beta1	= 0.99
SE from beta1	= 0.251
z	= 3.96
Prob > |z|	= 0.0001

Source : Past Research Data (processed by STATA 17.0)

The bias publication test was carried out using the egger method. The results showed a probability value of 0.0001 ($p < 0.05$), so there was evidence of *small-study effects*. Thus, it can be concluded that the analyzed research is subject to publication bias. A beta value of 0.99 indicates a tendency to correlate the effect size with *the standard error* of the examined study. In addition, a z-value of 3.96 with an error standard of 0.251 supports that the results of this test have statistical significance.

The results of studies on the impact of economic growth on investment levels in Indonesia are not only determined by research with specific results, both significant and high-value. These findings relate to the large variation in the results of the study as seen from the I^2 value in meta-analysis and meta-regression, which indicates a fairly high degree of heterogeneity between the various studies. Therefore, the estimates of the combined effects in this meta-analysis can be considered to be fairly unaffected by publication bias, although they are still affected by the high heterogeneity among the studies.

DISCUSSION

The results of the meta-analysis show that there is a relationship between economic growth and investment levels in Indonesia, with an effect value of around 0.070 and a 95% confidence interval between -0.054 to 0.194. This shows that overall, economic growth has a positive but insignificant effect on investment levels. Therefore, increasing economic growth does not always have a direct impact on increasing investment in Indonesia.

From a theoretical point of view, the relationship between economic growth and investment can be understood through the neoclassical growth theory formulated by *Robert Solow*. The theory emphasizes that capital accumulation is a key factor in increasing economic growth. In this context, when economic growth is high, there should be more opportunities for investment. However, the findings of this study suggest that the relationship is not significant, meaning that an increase in economic output is not directly followed by an increase in capital accumulation.

This condition can be explained by the existence of structural constraints in the economy, such as low levels of investment efficiency, uneven distribution of capital, and dependence on certain sectors. In addition, according to the concept of declining returns, capital additions do not necessarily result in a comparable increase in output without the support of technology and good quality human resources.

In the context of *Keynesian* theory by John Maynard Keynes, the decision to invest is strongly influenced by profit expectations and interest rates. While economic growth can increase profit expectations, if the economic situation is unstable or there is uncertainty in policy, investors are likely to

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delay their investment decisions. This suggests that economic growth is not the only factor that determines investment, but must be supported by macroeconomic stability and a conducive investment environment.

In addition, *the Harrod-Domar* theory developed by Roy Harrod and Evsey Domar underlines that investment is the main element in triggering economic growth. However, the results of this study actually show that the relationship is not significant, which indicates an imbalance between economic growth and capital accumulation. This can happen if economic growth is triggered more by consumption than investment, or if there are obstacles in the implementation of investment such as bureaucratic problems, regulations, and economic risks.

The findings of this study also indicate a very high degree of heterogeneity ($I^2 = 100\%$), meaning that there is significant variation between the different studies. These variations suggest that the relationship between economic growth and investment is not consistent, but rather is influenced by differences in research characteristics, such as the methods used, the time of the study, and the amount of data analyzed. Therefore, the application of the Random Effects Model (REML) in this study is the right choice because it can accommodate these differences.

If associated with research published in the journal (Hidayat, 2021), the similarity that can be drawn lies not in the variables discussed, but in the meta-analysis approach that shows that research results in the field of macroeconomics are often inconsistent among studies and are influenced by methodological factors. The study also found that there was an influence of study characteristics, such as the type of data and the number of observations, on the estimation results. This further strengthens the results of this study that the variation in research results is not only caused by economic phenomena, but also by differences in approaches in research.

The results of the meta-regression in this study showed that various factors such as the year of the study, the method used, the gender of the researcher, and the number of observations had a significant influence on the variation in effect size. Meanwhile, the data type did not show a significant influence. The year of the study illustrates the change in economic conditions from one time to another, while the methods used show that differences in estimation techniques can result in variations in results. A significant number of observations variables suggest that larger sample sizes can provide more consistent estimates.

Conversely, insignificant data type variables indicate that the use of panel, time series, or cross section data does not provide a significant difference in explaining the relationship between economic growth and investment. This suggests that the problem in the relationship lies not in the type of data used, but in other, more fundamental factors. The results of publication bias testing with the Egger method show a probability value of 0. 0001.

CONCLUSION

The findings of the meta-analysis indicate that economic growth through GDP has a positive relationship with the level of investment in Indonesia with an effect size of 0.070, but does not show a level of significance. The resulting heterogeneity is also relatively high with a value of I2 of 100 percent. The regression results showed that the variables of year, method, gender, and amount of data had a significant effect on effect *size*, while the type of data had no significant effect.

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