P-ISSN: 1979-5149 E-ISSN: 2686-2514 **Jurnal Ekonomi dan Kebijakan Pembangunan, Desember 2025, 14(2):116-132**
doi: https://doi.org/10.29244/jekp.14.2.2025.116-132
Available Online: https://journal.ipb.ac.id/index.php/jekp/index

The Role of Investment in Promoting Inclusive Growth: A Panel Data Study of Indonesian Provinces

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[diterima 30-06-2025: revisi 17-11-2025: diterbitkan 31-12-2025]

ABSTRACT

The main focus of this research investigates the role of investment, which in this study is divided into: foreign direct investment and domestic investment, and the extent of their respective contributions in achieving inclusive growth in Indonesia. This study uses fixed effect methodology with panel data analysis of 34 provinces in Indonesia. In general, the evolution of investment in Indonesia is still dominated by certain regions, centered in Java Island. Furthermore, regarding inclusive growth, we use 3 measurement indicators that have been adjusted by Bappenas. Our findings from this research are that foreign direct investment has not been able to optimally become a driving force for inclusive growth. Foreign direct investment will be efficiently impactful when technology is used as an accelerator to achieve high economic growth. Apart from that, this study also reveals that domestic investment has not had a significant impact on inclusive growth but has significantly influenced the distribution of people's income. Additionally, we found that education is the only thing capable of contributing to inclusive growth. Education has an impact on high economic growth, can increase income equality or reduce poverty, and at the same time increase the expansion of access and opportunities.

Keywords: *Foreign direct investment; Domestic investment; Inclusive growth; ICT;*
JEL Classification: E23, O33, O41

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INTRODUCTION

The economic journey in the 1950s to the 1960s with development policies at that time was mainly aimed at maximizing economic growth through the process of capital accumulation and industrialization. However, the benchmark for economic growth did not seem to be the full answer that was expected to be able to show improvements in the quality of people's lives. Therefore, economic development continued to experience redefinition in the following decades. At this time, the growing view that states that the main goal and essence of economic development efforts are no longer solely focused on aspects of high economic growth, but more on how to reduce poverty and inequality Johnson and Eccleston (2023), namely through a growth approach accompanied by equality and fulfillment of basic needs of life or (basic needs approach). In its development, still in the same decade, investment activities, especially foreign investment (PMA) or foreign direct investment (FDI) were considered suspicious by most developing countries. Foreign Direct Investment (FDI) is considered a threat Wartini (2015) namely to national sovereignty and multinational companies that are suspected of reducing social welfare. Meanwhile, at that time, precisely in 1963, the Indonesian economy was experiencing a recession triggered by hyperinflation. In addition, Indonesia's economic and political conditions at that time were also being isolated from the international world because of its confrontational political stance, having decided to leave the United Nations (UN) at that time. The condition was that Indonesia's inflation reached 119 percent along with the collapse of the Indonesian economy which made that era one of the most difficult times for the Indonesian economy.

This condition, coupled with various economic challenges such as market globalization, internationalization of production and monetary policy, has created a radical change in attitude for Indonesia and other developing countries. One of them is being forced to look for non-traditional investment sources that are not debt-based. That is why choosing foreign direct investment (FDI) is one solution for developing countries in facing economic challenges up to that time. By implementing this investment strategy, on the one hand, a developing country will be considered more stable, but on the other hand the country is also more vulnerable to financial crises. Therefore, in choosing this investment strategy, the country must still be able to create additional funding opportunities without increasing its foreign debt.

Until now, investment has indeed become something that is increasingly sought after not only by developing countries, but also by developed countries. In fact, developing countries no longer consider investment as something suspicious, where previously investment in this case FDI was considered a factor of domination of one country over another. There has been a paradigm shift, that investment, namely FDI, is beginning to be understood as a means for technology transfer and innovation between countries. Of course, this situation has caused the world economy to experience many changes in recent years. Access to investment is currently increasingly open through free trade which is a flow for capital and goods. This situation also makes FDI a strategy that is considered quality to increase economic growth. Because with the existence of Foreign Direct Investment (FDI), it can positively affect the balance of payments, overcome the deficit in national savings, and create new opportunities for better jobs with better salaries and better working conditions. This is in line with the investment theory presented by (Todaro & Smith, 2020).

Several countries including Indonesia are trying to make investment one of the pillars of a strong economic development strategy. It can be said that Indonesia has significant production potential, they have everything to take off effectively from their economy. However, with

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the limited capital resources owned by Indonesia, the shortage must be covered by capital and funds from the state or other parties. For this reason, Indonesia is one of the countries that has focused its strategy on economic recovery and social welfare. Because this investment is considered important, Indonesia is trying to implement all steps to make its country better for the sake of attracting foreign investment flows, Investment in Indonesia is one of the important focuses of the government as seen from its policies such as the online single submission (OSS) integrated business licensing system by BKPM and also including the latest is the ratification of the Omnibus Law. This effort is also made to develop a massive business climate and investment in Indonesia. The condition of investment in Indonesia can be said to be successful and occupies a good position compared to before. The Ministry of Investment/Investment Coordinating Board (BKPM, 2022) revealed that Indonesia in 2022 had an investment score of 84.4, ranking 4th out of 67 other countries as a country with strong investment appeal.

According to the report of the Investment Coordinating Board (BKPM), investment realization in Indonesia in 2022 reached IDR 1,207 trillion, and has exceeded the initial target of IDR 1,200 trillion. This achievement is considered very encouraging by the government, amidst the dark clouds that shroud the global economy. The Indonesian government emphasized that the role of investment is very important because investment is one of the keys to national economic growth. Therefore, President Joko Widodo instructed all regional heads in Indonesia to pay more attention to investment. In this case, it is clear that the government plays a key role in determining the influx of investment in a country through its policies.

Above the current investment achievement as a main pillar of growth, the paradox is, is economic development getting better? Thus, the fundamental and very necessary change is the paradigm shift and also the focus of development economics. The focus of development economics studies needs to be more directed at investigating the factors causing differences in the level of economic performance of each country, specifically for the study of developing countries. The purpose of development, in the current era, is increasingly recognized as a process of various dimensions of life that includes fundamental changes also concerning social structures, community behavior, improvements in institutional systems, and economic aspects such as increasing and distributing per capita income, and poverty alleviation. Which condition is often referred to as inclusive development/growth according to the concept (Kusumawati et al., 2016). Moreover, considering the platform of world development goals in the Sustainable Development Goal's (SDG's) which demands that development must be sustainable and inclusive.

Several previous studies have focused on the impact of economic growth without presenting the perspective of equality and social welfare as measured by indicators of inclusive economic growth, which according to Bappenas (2019) the development approach to economic growth has caused social problems and several major crises, including: 1) social inequality; 2) poverty; 3) environmental damage. Therefore, a new, more comprehensive development model needs to be formed. The World Bank states that inclusive growth is growth that expands the scope of the economy, eases access to economic assets, successfully expands markets, and creates equal opportunities for the next generation.

Domestic and foreign investment play a crucial role in driving inclusive economic growth because they both increase capital accumulation and productivity. In the Solow Growth Model, long-term growth is driven by capital accumulation and technological advancement (Solow, 1956), which is a key foundation for output expansion. Domestic investment strengthens local economic structures and creates broad production linkages, in line with endogenous growth theory, which emphasizes the role of innovation and knowledge spillovers in expanding economic opportunities (Romer, 1990). Meanwhile, foreign investment brings technological and managerial advantages, as explained in the Eclectic OLI Paradigm (Dunning, 1988), which enables technology transfer and enhances workforce skills. When both are directed toward labor-intensive productive sectors and connected to local supply chains, domestic investment and FDI can complement each other in creating not only high but also inclusive growth—growth that expands opportunities, reduces inequality, and improves social well-being more equitably (OECD, 2018; UNDP, 2014).

In developing countries, especially Indonesia, it seems necessary to research that focuses on the effectiveness of the impact of investment on inclusive economic growth. One study by Kusumawati (2018) shows that FDI is needed by developing countries, in this case Indonesia, because it can help finance national development. Foreign investment can also support inclusive growth through a number of channels, such as job opportunities for local communities, people with disabilities, and women; increasing productivity; and corporate social responsibility (CSR). By analyzing investment and several other control variables such as education, workforce, population and income, this study will also try to discuss the influence of investment on inclusive economic growth in Indonesia before and after the Covid-19 crisis pandemic.

The urgency of this research is crucial given the government's push for industrialization, down streaming, and economic transformation through massive investment. Policies such as the Omnibus Law and deregulation have been designed to attract investment; however, their actual impact on inclusiveness remains unproven, primarily due to a lack of empirical evidence. Furthermore, the empirical literature in Indonesia tends to focus more on the relationship between investment and aggregate economic growth. At the same time, the dimensions of inclusiveness, including job creation, income equality, and increased public access, remain relatively under-researched. Therefore, this research is crucial in providing scientific evidence on whether Indonesia's investment strategy is on the right track to creating more equitable growth. The results of this study can not only fill this gap in the literature but also provide a strong foundation for the government in designing investment policies that are not only pro-growth but also pro-poor and pro-equality.

The research question in this study mainly looks at the investment phenomenon that occurs in developing countries, especially Indonesia. The investment strategy that continues to be touted by the leader of the Indonesian state, President Joko Widodo, in the name of industrial down streaming for economic development. However, it is much more important to ensure to what extent the investment contributes to inclusive development. The issue of inclusive development is not a new issue, according to Klasen (2010), McKinley (2010), Anand et al. (2013), and Berg and Ostry (2017) emphasize that economic development is not just growth but must also be inclusive which is able to reduce poverty and inequality.

Keynesian Theories of Growth

The equation discovered by Keynes is also known as the expenditure approach method, which is generally determined by several types of expenditure instruments, including consumption, investment, government expenditure, and net exports (export-import) with the following equation:

$$\boldsymbol{Y = C + I + G + (X - M)}$$

Jhingan (2000) argues referring to Keynes, that investment plays an important role in the economy and the gap between income and employment can be narrowed through investment. Increased investment causes an increase in income and thus increases purchasing power, which can lead to increased demand for consumer goods, thereby increasing employment and income, and so on, occurring simultaneously. The relationship between investment and income, which we more often known as the multiplier (K), is as follows:

$$\boldsymbol{Y = \frac{\Delta y}{\Delta i} = \frac{\Delta y}{\Delta y - \Delta c} = \frac{1}{1 - MPC} = \frac{1}{MPS}}$$

Through this multiplier K, its coefficient shows the exact relationship between employment, overall income, and investment levels. This means that if investment increases, income will increase by K times the increase in investment. The determinant of investment itself, according to the hypothesis built from Keynesian growth theory, also comes from the marginal propensity to save. There is an inverse relationship between investment and marginal propensity to save. If investment increases, the marginal propensity to save will decrease and vice versa if investment decreases.

Endogenous Growth Theory

Among the various theories of economic growth, the endogenous growth theory (new growth theory) specifically includes the importance of human resources and innovation in the growth process. Therefore, there is a theoretical basis underlying the objectives of this study. Romer Paul (1986) and Lucas Jr (1988) began by emphasizing the role of human capital and physical capital in growth. Before presenting their views, neoclassical economists Solow (1956) and Swan (1956) ignored the role of human capital in explaining growth and emphasized the importance of exogenous growth factors. Both proponents of the endogenous growth theory strengthened the traditional Solow model that identified a number of endogenous factors contributing to growth such as human resource development, research and development (R&D), and innovation. This theory argues that technological progress comes from innovation. In other words, it captures new processes, products and markets, which mostly arise from productive economic activities. Therefore, this study is based on the theoretical framework put forward by Romer Paul (1986), Lucas Jr (1988) and Mankiw et al. (1992) included human capital and physical capital in the production function:

$$\boldsymbol{Y = AK_t^{\alpha}\,(\theta_t W_t L_t)^{1-\alpha}\ \ldots}$$

Where:

Yt = Total output/production in the economy
A = Indicates the level of production,
Kt = Capital,
Wt = Measures the quality of work
Lt = Labor stock

While the proxy for working time spent by households is θt so that θWL measures the effectiveness of human resources for the economy as a whole and α = elasticity of capital output. This also shows that human accumulation is very important for the expansion of output in an economy. In developing countries, especially Indonesia, it seems necessary to have research that focuses on the effectiveness of the impact of investment on inclusive economic growth. One previous study, Kusumawati (2018), showed that FDI is needed by developing countries, in this case Indonesia, because it can help finance national development. Foreign investment can also support inclusive growth through a number of channels, such as job opportunities for local communities, people with disabilities, and women; increasing productivity; and corporate social responsibility (CSR). By analyzing investment and several other control variables such as education, workforce, population and income, this study will also try to discuss the influence of investment on inclusive economic growth in Indonesia before and after the Covid-19 crisis pandemic.

Inclusive Growth

In the early 2000s, the popular term used to describe pro-poor growth was participatory growth. Meanwhile, according to Klasen (2010), inclusive growth is different from pro-poor growth or growth that favors poor elements of society. On the one hand, pro-poor growth only focuses on the poor or poverty alleviation. At the same time, inclusive growth demands growth that is beneficial to all people or agents in the economy. Of course, pro-poor growth is the basis for current thinking about inclusive growth (Ngepah, 2017). This inclusive growth emphasizes the rate and distribution of economic growth whose growth is sustainable and effective in reducing poverty (Anand et al., 2013; Berg & Ostry, 2017). Inclusive growth is also a growth goal that not only creates new economic opportunities but also encourages equal opportunities across all levels of society. Thus, growth can be inclusive when all members of society are open to participate and contribute to the growth process on the basis of equality (Ali & Son, 2007).

Inclusive growth has two main aspects according to McKinley (2010), namely: first, is to achieve sustainable growth that will create and expand economic opportunities, and second, to ensure broad access for members of society to be able to participate and benefit from these growth opportunities. Inclusive growth also often refers to the goal of encouraging high growth while being able to provide productive employment and equal opportunities, so that all elements of society can share in the growth and employment, which ultimately is to overcome inequality, especially for the poor or disadvantaged.

Furthermore, Kireyev and Chen (2017) also emphasized that growth is said to be inclusive if it is able to reduce poverty and inequality. Growth reduces poverty if the average income of the poor increases. Growth reduces inequality as measured by the Lorenz curve. Measurement of inclusive growth, especially in Indonesia, was carried out by Sanjaya and Nursechafia (2016) using provincial-level data. The method used is the Inclusive Growth Index (IPI) based on research by Ali and Son (2007) which uses the social opportunity function method by increasing the average level of opportunity and the equity index of opportunity.

In line with Bappenas' view of the basic concept of inclusive economic growth, namely development that creates broad access and opportunities for all social classes fairly, evenly, increases welfare and reduces disparities between groups and regions. The calculation of the level of inclusiveness of Indonesian development is measured through three aspects, namely aspects of economic growth, inequality and poverty, and access and opportunities which are manifested in the inclusive economic development index. The index includes three pillars and there are eight sub-pillars with 21 indicators that form the inclusive economic development index. And the core formulated from the pillars of inclusive economic growth in Indonesia refers to Bappenas (2019), there are at least three, namely: First is high economic growth (inclusive growth/IG 1), dimensions of economic growth and development (economic growth, employment, economic infrastructure). Second is income equality and poverty reduction (inclusive growth/IG 2), dimensions of income equality and poverty alleviation (inequality, poverty. And third is expanding access and opportunities (Inclusive growth/IG 3) dimensions related to expanding access and opportunities (human capabilities, basic infrastructure).

This study attempts to look at inclusive growth based on the 3 pillars built by Bappenas, furthermore the results of our study are expected to be a consideration and reference for related parties, especially the government, in determining strategies and formulating policies to improve the quality of economic growth in Indonesia. In addition, the main questions that will be confirmed in this study are: (i) is the inclusive economic growth paradigm in accordance with the Indonesian economy; (ii) is the ongoing investment effective in Indonesia; (iii) how much does human capital contribute, other factors in explaining Indonesia's inclusive economic growth.

METHODOLOGY

Data

The dataset in this study consists of cross-provincial observations for 34 provinces during the period 2017-2022 obtained from the main databases of the The Ministry of National Development Planning/Bappenas, Central Statistics Agency (BPS), Bank Indonesia and the Investment Coordinating Board (BKPM).

Empirical Model

The theory underlying this study comes from the economic development model by (Keynes, 1937) followed by Romer Paul (1986), Lucas Jr (1988) and Mankiw et al. (1992) and supplemented with the relationship between information and communication technology (ICT) in inclusive growth (Awad & Albaity, 2022); (Ofori et al., 2022). The empirical rigor of this paper begins with the specification of baseline data that also includes control variables into the inclusive growth model. Finally, according to the hypothesis path in this paper, the researcher tries to see the interaction between ICT and Foreign Investment (FDI). Therefore, the basic model of this study is determined as follows:

$$IG_{i,t} = \alpha + \beta_1 lnFDI_{i,t} + \beta_2 lnDI_{i,t} + \beta_3 lnL_{i,t} + \beta_4 lnPop_{i,t} + \beta_5 lnEduc_{i,t} + \beta_6 lnIncome_{i,t} + \beta_7 ICT_{i,t} + \beta_8 Covid-19 + \beta_9 LnFDI * ICT_{i,t} + \beta_{10} LnDI * ICT_{i,t} + \varepsilon_{i,t} \ldots$$

Description:

$IG_{i,t}$: Inclusive Economic Growth Index of province i in year t

$FDI_{i,t}$: Realization value of Foreign Direct Investment (PMA) of province i in year t

$DI_{i,t}$: Realization value of PMDN of province i in year t

$L_{i,t}$: Number of Workers of province i in year t

$Pop_{i,t}$: Number of residents of province i in year t

$Educ_{i,t}$: Average length of schooling over the age of 15 years of province i in year t

$Income_{i,t}$: Per capita income of province i in year t

$ICT_{i,t}$: Information and Communication Technology Development Index of province i in year t

Covid-19 : Dummy variable before and after the Covid-19 pandemic.

The model in this study is estimated using a fixed effect approach with the aim of seeing the individual effects of each province analyzed (Ekananda, 2016; Silalahi & Falianty, 2025).

This study provides a novel model modification by integrating ICT as a moderating factor in the relationship between FDI and inclusive economic growth in Indonesia. While many previous studies assess the impact of FDI or ICT separately, this study argues that the benefits of FDI depend heavily on the quality of domestic ICT, which determines the capacity for technology absorption and the broader distribution of economic benefits. By examining the ICT × FDI interaction, this study not only strengthens endogenous growth theory and the OLI paradigm but also provides empirical evidence that digital infrastructure development is a crucial prerequisite for FDI to generate truly inclusive growth in Indonesia.

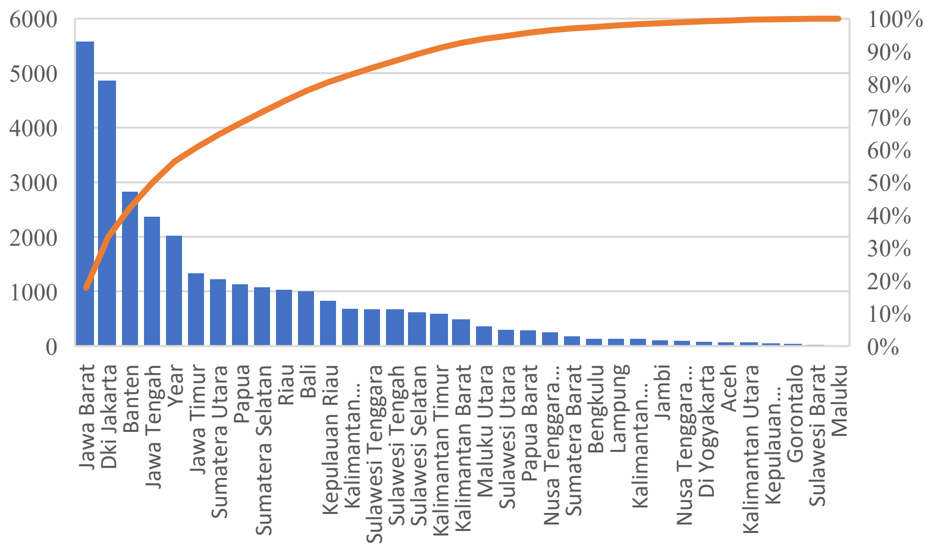
RESULTS AND DISCUSSION

Investment Overview in Indonesia

So far, the countries that are sources of foreign investment in Indonesia are dominated by Singapore, Japan, China, the Netherlands, and America. And if you look at the main targets of foreign investment, the majority are in the manufacturing sector. Some of the main industries are mining, non-machine metal and electronics industries, printing and paper industries, as well as plantations, livestock and food crops. If you look at the development of foreign direct investment (FDI) in Indonesia, it is still classified as Java-centric because it is concentrated in Java. The latest data we obtained, the amount of foreign investment for Java from the total investment in Indonesia is quite large, reaching 72.28 percent. Meanwhile, the three provincial areas with the highest or largest investment are first in West Java at 16.78 percent of the national or 5,217 million dollars. Furthermore, followed by the province of DKI Jakarta and third, the province of Banten, each with 11 percent and 7 percent of the total. We can see this in Figure 1.

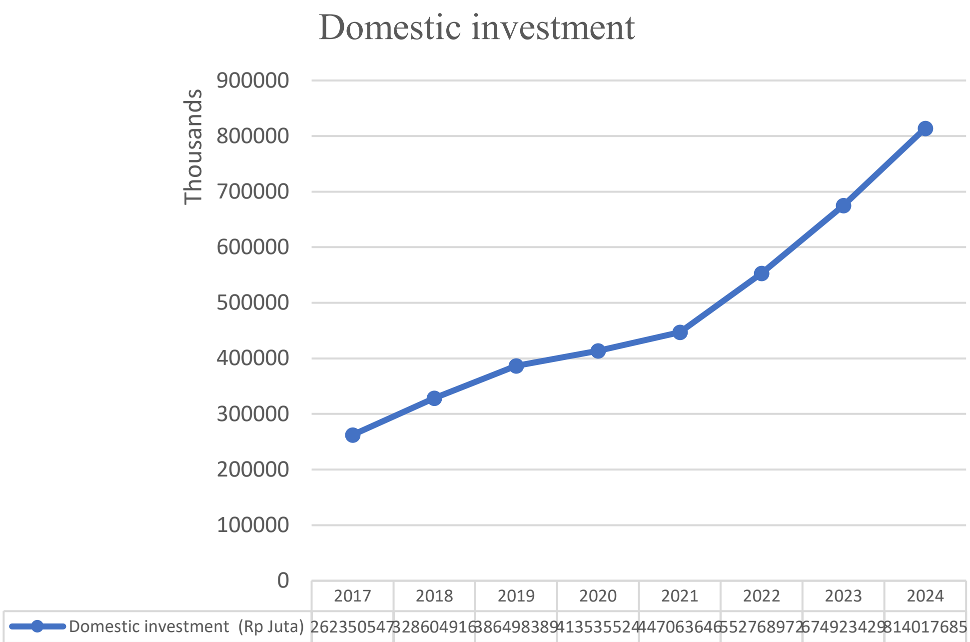
The description of the distribution of this investment is quite reflective that the so-called investment equality is still very far from what is actually targeted and expected. The distribution of foreign investment outside Java is only 27 percent, this is what will continue to deepen the gap between regions in Indonesia. Therefore, it can be concluded that there needs to be an evaluation of the current model by re-evaluating the Foreign Direct Investment (FDI) program so that there is significant equality in the distribution of Foreign Direct Investment (FDI) in Indonesia so that the program implemented runs effectively and on target. In addition, the Foreign Direct Investment (FDI) program must be monitored if the distribution of Foreign Direct Investment (FDI) has been implemented, so that it can be re-evaluated by the public.

Apart from foreign investment, efforts to achieve inclusive economic growth are also by encouraging domestic investment. The development of domestic investment over the past 5 years in Indonesia has also increased significantly as in Figure 2. In 2021, the total value of domestic investment reached 447,063 billion rupiah, an increase of 8 percent from the previous year. However, the amount of domestic investment is still very small when compared to the total foreign direct investment. The author calculates the amount of domestic investment is only around 9 percent. This means that in general or most of the investment value is very much dominated by foreign direct investment.



Source: BKPM, 2024 (processed)

Figure 1. Foreign Direct Investment in Indonesia



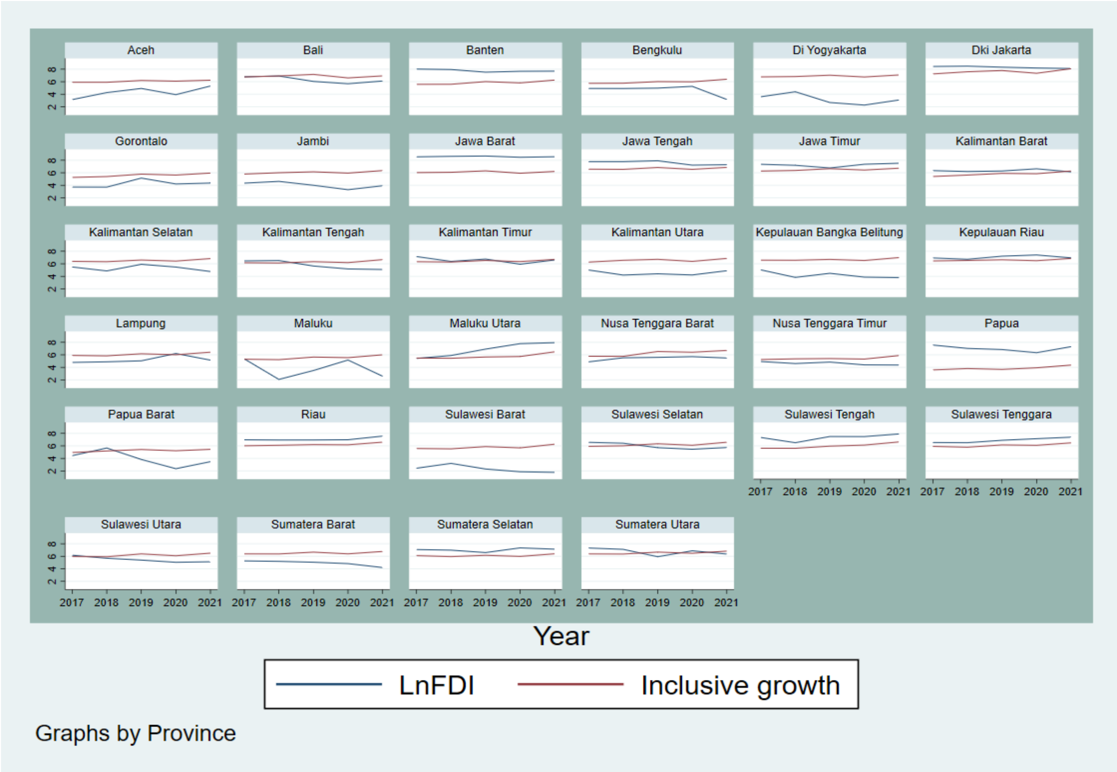
Source: BPS and BKPM, 2024 (processed)

Figure 2. Domestic investment in Indonesia

Inclusive Growth Phenomenon in Indonesia

Economic growth is called inclusive if its economic growth continues to increase and at the same time reduces poverty, as well as reducing inequality and absorbing labor. The analysis of inclusive economic growth in this study is divided into three parts according to the inclusive economic growth index in Indonesia. The first is high economic growth (inclusive growth/IG1), the second is related to income equality and poverty reduction; and the third is expanding access and opportunities. The first part is for high economic growth, this analysis is based on the last year of the research period that the average economic growth in Indonesia was 5.1 percent. Regions that are in high economic growth above the average are 15 regions or equivalent to 44 percent. Meanwhile, the highest economic growth province in DKI Jakarta reached 7.58 percent and the lowest was in the Papua province at 3.7 percent.

Furthermore, if viewed from the second pillar of income equality and poverty reduction (Inclusive growth/IG2) nationally, the average income equality and poverty reduction index is at 6.7. There are 19 regions or 55 percent above the national average of income equality and poverty reduction index. Meanwhile, the province with the highest income equality and poverty reduction index is in the Bangka Belitung Islands province at 8.34 and the lowest is in the Papua province at 3.81. Finally, for the third part, seen from the expansion of access and opportunities (inclusive growth/IG3) nationally, the average index is 7.5. There are 19 regions or 55 percent above the national average of access and opportunity expansion index. Where the highest access and opportunity expansion index is in the Special Region of Yogyakarta province at 9.37 and the lowest access and opportunity expansion index in Indonesia is in the Papua province.



Source: Author's calculation (2024)

Figure 3. Inclusive Growth and Foreign Investment in Indonesia

From the data obtained by the author, it gives us an idea that inclusive economic growth in Indonesia has not been achieved, especially in the eastern part of Indonesia. Consistently, its performance is always the lowest compared to other regions in Indonesia. Moreover, the basis and motivation in this research is to see whether the government's efforts to promote investment strategies so far have been able to answer or complete the goal of inclusiveness. The following is in Figure 3, related to the investment value and inclusive growth of each region.

Table 1. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
IG1	5.047941	0.772586	2.44	8.21
IG2	6.583529	0.924939	3.54	8.34
IG3	6.806647	0.898173	4.13	9.37
LnFDI	5.782082	1.616757	1.774952	8.679482
LnDI	8.45326	1.454195	3.929863	11.03642
LnLabor	11.70632	1.220155	9.153664	14.81473
LnPop	8.386319	1.00842	6.538285	10.80602
LnEduc	2.186067	0.09707	1.884035	2.415914
LnIncome	1.66184	0.152453	1.190888	2.036012
LnFDIICT	31.02057	10.81335	8.853624	62.12955
LnDIICT	45.56104	12.356	15.34547	83.56883
Prov	17.5	9.839691	1	34

Source: Author’s calculation

In Figure 3, it is clear that foreign investment is quite significant in the West Java province, but on the contrary, its most significant inclusive growth is seen in the Yogyakarta province.

Descriptive Statistics

Descriptive analysis in this study describes each variable used in statistics seen from the average value, standard deviation, minimum value and maximum value. In table 1, for inclusive economic growth consists of 3 proxies, first IG1 for high economic growth, second IG2 for income equality and poverty reduction, and third IG3 for expanding access and opportunities. Furthermore, for foreign direct investment, domestic investment, labor, population, education, income are all in the form of natural logarithms (ln).

Estimation Results

The following are the results of the model estimation built in this study, seen in Table 2.

Table 2. Estimation Results

VARIABLES	IG1	IG2	IG3
LnFDI	-0.429**	0.121	-0.0155
	(0.204)	(0.122)	(0.183)
LnDI	0.281	0.0478*	-0.0708
	(0.255)	(0.120)	(0.156)
LnLabor	0.318***	-0.0905	-0.0800
	(0.0987)	(0.0783)	(0.107)
LnPop	-0.272*	0.155	1.509**
	(0.145)	(0.148)	(0.588)
LnEduc	2.682***	2.356**	10.15***
	(0.903)	(1.147)	(2.625)
LnIncome	-0.861	4.741**	-15.00***
	(3.438)	(2.326)	(4.904)
ICT	0.194	-0.614	3.552***
	(0.938)	(0.588)	(1.141)
Covid-19	-0.696***	-0.103**	-0.059*
	(0.061)	(0.044)	(0.066)
LnFDIxICT	0.111***	-0.0230	0.00870
	(0.0374)	(0.0222)	(0.0349)
LnDIxICT	-0.0561	0.00128*	0.00748
	(0.0502)	(0.0238)	(0.0300)
Constant	-2.629	-3.746	-21.02***
	(2.774)	(2.933)	(5.576)
Observations	170	170	170
R-squared			0.857
Number of Prov	34	34	34

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: author's calculation

The results of the estimation of foreign direct investment on inclusive growth

The results of this study found that foreign investment did not have a significant effect on inclusive growth. This can be seen in table 2 for the IG2 and IG3 models that based on the estimation test conducted, the impact of foreign direct investment had no effect. This means that foreign direct investment that has entered Indonesia has not been able to help equalize people's income which ultimately reduces poverty. In addition, based on these results, foreign direct investment has also not been able to drive the expansion of access and create opportunities for the community. This can happen considering that the realization of foreign direct investment is still centered on certain industries, such as mining, non-metallic machinery and electronics and the printing industry. So there are still quite a lot of sectors that have not been touched which causes inequality between sectors. This phenomenon certainly will not have an impact on equalizing people's income. These results are in line with the research.

Furthermore, regarding the impact of foreign direct investment on high economic growth, referring to the statistical results that we tested, foreign direct investment has an effect on economic growth. However, what is interesting and a little surprising from the results we found is that the effect of foreign direct investment actually has a negative impact, meaning that even when foreign direct investment continues to be boosted, it does not necessarily increase high economic growth. Of course, this result is not optimistic for policy makers in this case the government. This condition could occur, that foreign direct investment has not been optimal in Indonesia because conditions in the regions still lack the availability and readiness of supporting facilities such as skilled workers and inadequate technology. This is confirmed by the findings (Bénétrix et al., 2023) which state that foreign direct investment and growth for developing countries with an average level of education or financial depth do not have a significant correlation.

Furthermore, the contribution of foreign direct investment as a pillar of Indonesia's economic growth is still not optimal, it could be because in the field/region there are still many factors that hinder investment such as problems with permits, laws, regional autonomy and so on (Ridha & Parwanto, 2020). Although research conducted by Kang (2022) suggests that FDI is a key factor in inclusive economic growth, it does occur when supported by an advanced manufacturing industry and adequate infrastructure. However, in the context of Indonesia, we see that it has not been able to realize this by looking at the impact of the rate of foreign investment on inclusive economic growth during the period this study was conducted. These findings are not in accordance with the growth theory built and supported by the results of research from (Sadiq et al., 2021) which revealed that in the long-term foreign investment has a negative and insignificant impact on economic growth. In addition, similar results that we found also occurred in previous years and various countries (Sachs & Warner, 2001) and (Nkoro & Uko, 2022).

Domestic investment estimation results on economic growth

The results of our estimation test show that the role of domestic investment has not contributed optimally to inclusive growth in Indonesia. This can be seen from the three pillars used in this study, domestic investment has only been shown to have an effect on income equality and poverty reduction. This result is indeed not optimal, but it illustrates a little better because it has a direct impact on reducing income inequality in society. Looking back specifically at the data on the realization of domestic investment by province from 2017 to 2021, it has indeed increased significantly every year. It seems that the government's efforts to invite local investors are an effective strategy, where the strength or contribution of this domestic investment has a real impact on income equality and poverty reduction.

These findings show that the higher the domestic investment, the lower the inequality. Indeed, the picture of domestic investment is still very small in portion when compared to foreign investment and domestic investment in Indonesia is still specifically in certain sectors that are not too large such as in the agriculture, plantation, forestry, fisheries, livestock, public housing and so on (Ayunda & Sari, 2021). The results of our study are also in line with the theory and several previous studies. That domestic investment has a real positive impact on efforts to equalize income and reduce poverty (Soegoto et al., 2022; Tobondo et al., 2021).

Results of control variable estimation

In this study, we included several control variables such as labor, population, education, income and technology proxied by ICT. First of all, we look at the effect of labor on inclusive economic growth. We use labor data per province displayed from the Central Statistics Agency. Our findings regarding the contribution of labor to inclusive economic growth are not comprehensive. Based on the results of labor statistics, only a significant effect on high economic growth in the area. However, for the purpose of income equality or poverty reduction, it has not been proven statistically. Likewise, the influence of labor on expanding access and opportunities has not had a significant impact. These results indicate that labor only has an impact on high economic growth (IG1), meaning that when the workforce in an area increases, economic growth in that area also increases. This is in accordance with the growth theory by (Todaro & Smith, 2020) and the findings of (Iacovone et al., 2022). What is new is that it turns out that labor has an effect on high economic growth but not necessarily on reducing inequality and expanding access.

Second, we look at the effect of population on inclusive economic growth, the data we use is the population of an area in relation to inclusive economic growth. Our findings show that population has a significant effect on economic growth, but the effect here is not as expected. That the population, rather than increasing economic growth, actually decreases economic growth. This can and is very possible if the population is not productive (Iacovone et al., 2022). This result is also supported by the findings (Klasen & Lawson, 2007) which found that higher population growth will have an impact on decreasing per capita income and we also found that population can have an impact on expanding access and opportunities.

Furthermore, we include the education variable as a description of the quality of society, to see its impact on inclusive economic growth. Education data using data on the average length of schooling in an area. Our findings are quite optimistic and have proven significantly that education has an impact on high economic growth while also being able to reduce poverty or income inequality and education also has an influence on expanding access and improving services. In the end, this finding proves that inclusive economic growth can be achieved through education. Education can improve people's quality of life, the more educated the job opportunities are also higher so that it can increase income and change the income class from low to middle and middle income to upper income. In addition, education has also been shown to effectively increase access and services in an area. These findings are in line with growth theory (Hanushek & Woessmann, 2023) and are supported by research conducted (Habibi & Zabardast, 2020). In addition, we also tried to see the impact of Covid-19 on inclusive growth in Indonesia. We included Covid-19 as a dummy variable and our results showed that Covid-19 has been proven to have a significant impact on inclusive economic growth. The presence of Covid-19 can reduce high economic growth, exacerbate poverty or income inequality and have a negative impact on expanding access and opportunities. These results are also similar to the findings of Gupta et al. (2021) who said that the impact of Covid-19 was real on the economy but it is not certain that the government's strategy can change towards a more inclusive direction. Otherwise, it will eventually damage the ecology and increase inequality.

Finally, this paper tries to include ICT as a proxy for technological progress that interacts with investment. The hope is that investment in a region if supported by a good level of technology can accelerate inclusive economic growth in Indonesia. Based on the results of our tests, the interaction between technology has not been able to have a comprehensive impact on inclusive growth, but from the results we obtained, at least technology has been able to accelerate high economic growth through its interaction with foreign direct investment. Furthermore, the interaction of technology with investment has not been able to have a significant impact on income equality and expansion of access and services. The implication is that direct foreign investment will have an effective impact if supported by technological progress. The results of this study are in line with the findings of (Awad & Albaity, 2022; Habibi & Zabardast, 2020) and (Wang et al., 2023).

CONCLUSION

This study analyzes inclusive economic growth across 34 Indonesian provinces during 2017–2022 based on Keynesian growth theory and Romer's endogenous growth framework, both of which emphasize investment as a key driver of economic expansion. However, the empirical results indicate that the contributions of foreign and domestic investment in Indonesia do not fully align with theoretical expectations. Foreign direct investment (FDI) demonstrates a significant positive impact on economic growth only when interacted with technological advancement, suggesting that technological readiness is essential for maximizing the benefits of foreign capital. Yet even under this interaction, FDI has not contributed significantly to income equality, poverty reduction, or other dimensions of inclusive growth. Meanwhile, domestic investment shows a more nuanced pattern: it has been found to influence income equality and poverty reduction, but this influence is not strong enough to translate into overall improvements in inclusive growth. Furthermore, the Covid-19 pandemic has substantially weakened inclusive growth indicators across regions, reflecting vulnerabilities in economic resilience and social welfare structures. Together, these findings underscore that investment alone both foreign and domestic has not been sufficient to drive inclusive growth in Indonesia without complementary structural improvements, particularly in technology, human capital, and regional development capacity.

Policy recommendations arising from this study emphasize the need for Indonesia to realign its investment strategy so that both foreign and domestic capital contribute more effectively to inclusive economic growth. Given that FDI becomes impactful only when supported by technological readiness, the government should prioritize expanding digital infrastructure and strengthening human capital through improved education and vocational training to enhance technology absorption at the regional level. Investment incentives must be redirected toward sectors with high employment multipliers and stronger linkages to local enterprises, ensuring that capital flows generate broader welfare gains rather than remaining concentrated in capital-intensive industries. At the same time, better coordination between central and regional authorities is required to tailor investment policies to provincial characteristics, while a more adaptive social protection system is needed to safeguard inclusiveness during economic shocks such as Covid-19. Supporting domestic investment in productive and inclusive sectors, particularly MSMEs and value-added industries, will further ensure that Indonesia's growth trajectory becomes more equitable and sustainable.

The limitation of this study is that for direct foreign investment, the source of investment and the investment target sector are not specifically seen. This may also be a suggestion for further research.

The next suggestion, especially for policy makers in this case the government, should be to achieve the direction of inclusive economic development with the main instrument through education. So far, if using physical investment or capital, both foreign direct investment and domestic investment have not been proven to be able to achieve inclusive growth itself.

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